

FIG. 1

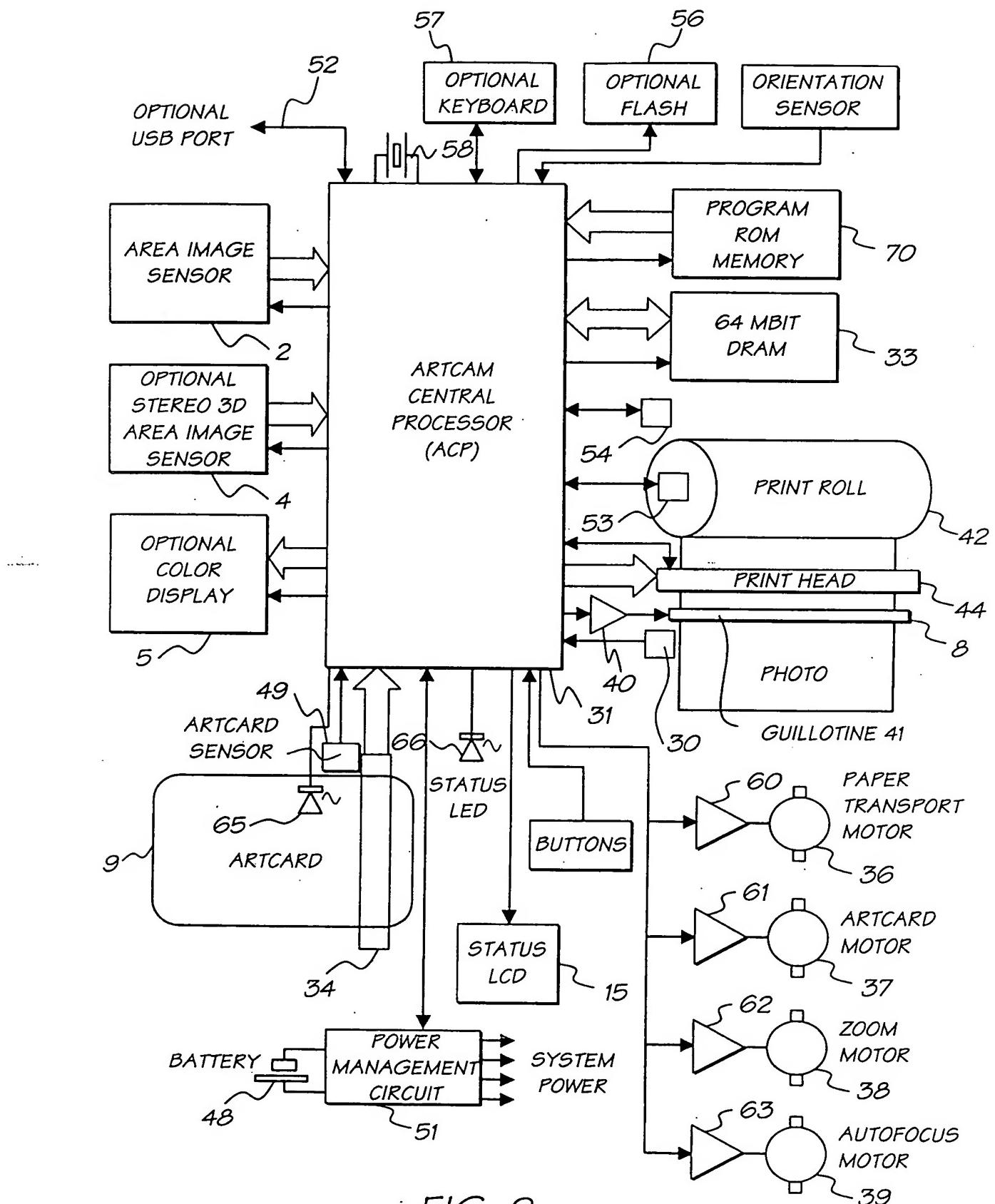


FIG. 2

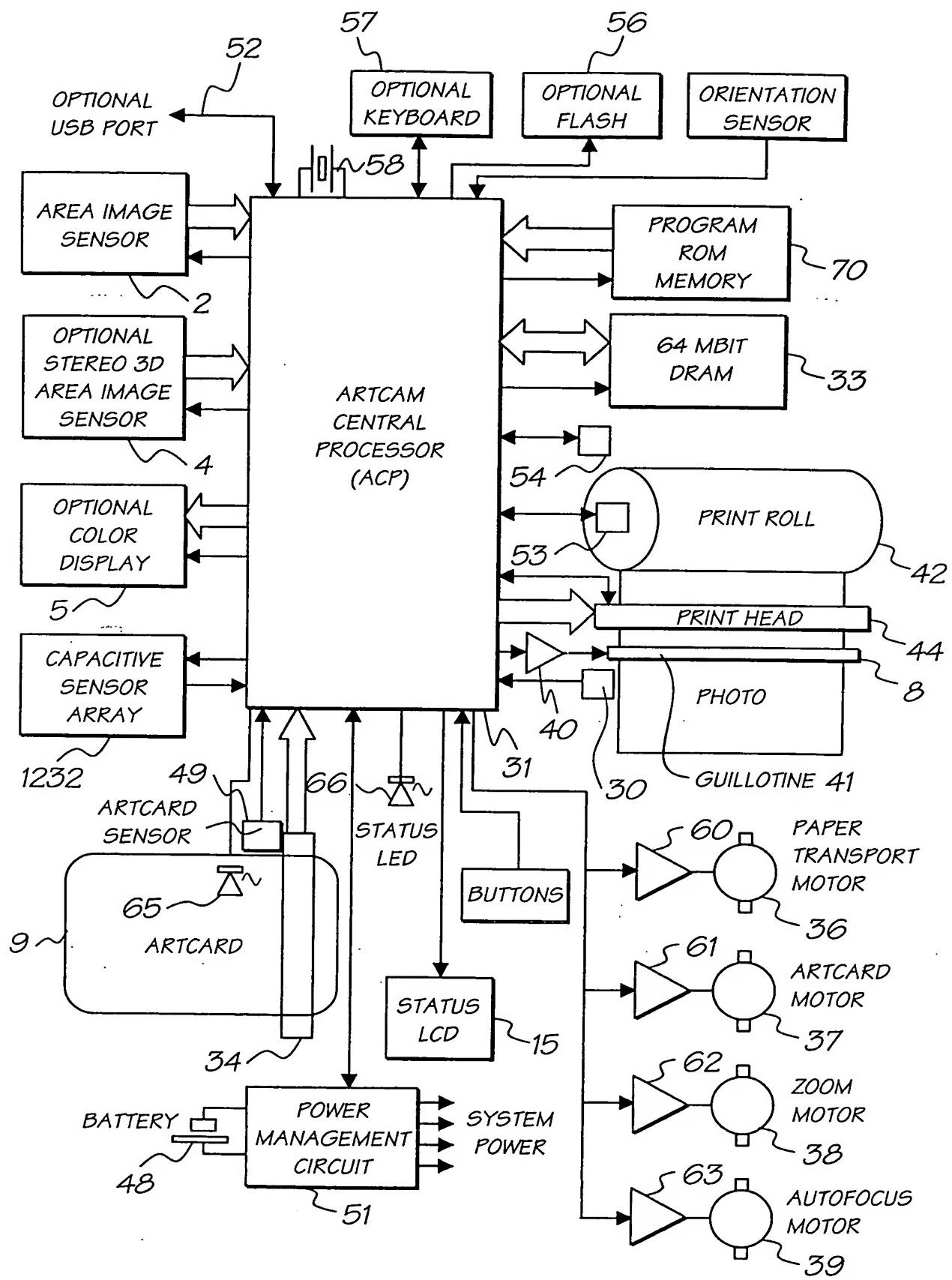


FIG. 2A

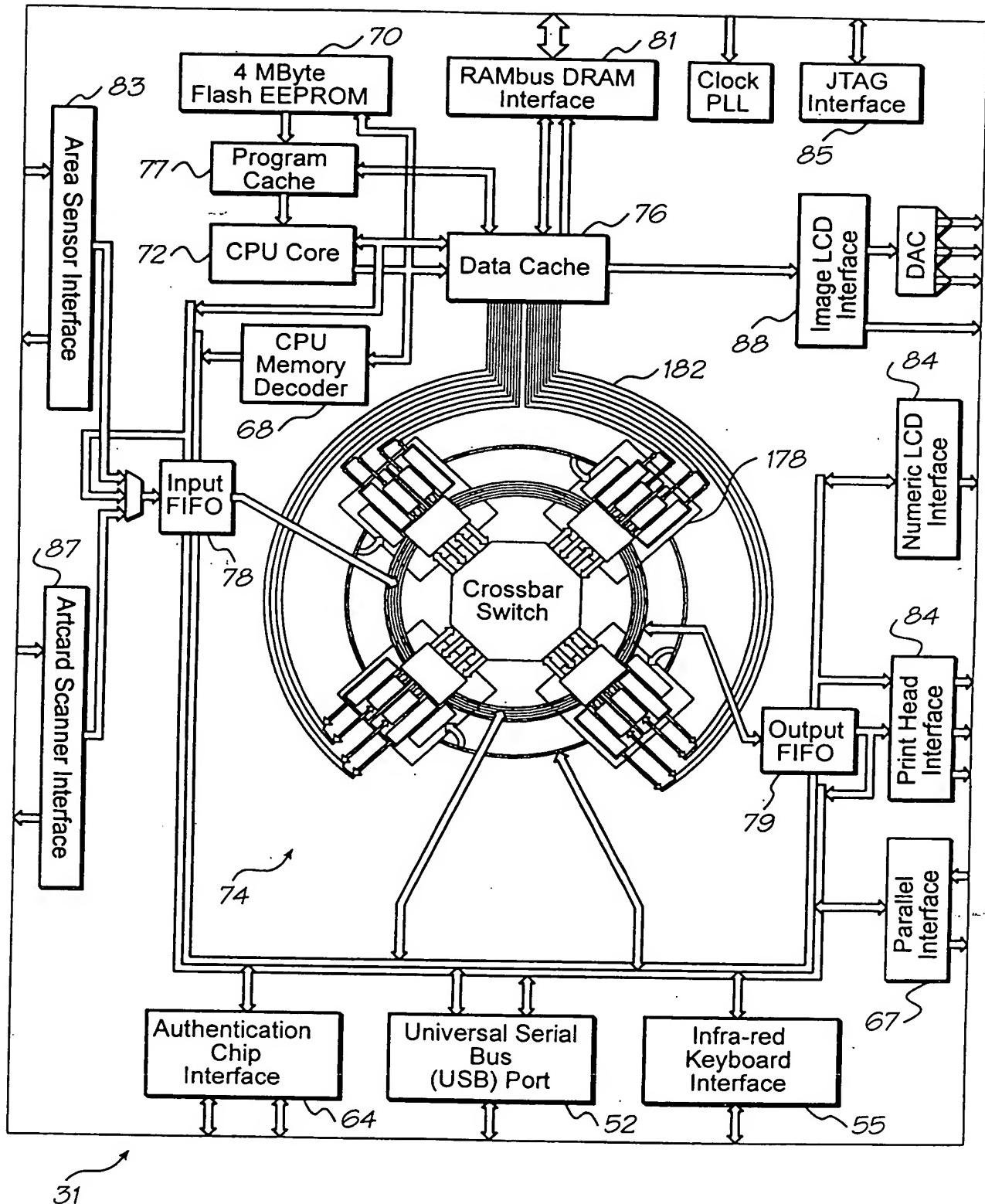


FIG. 3

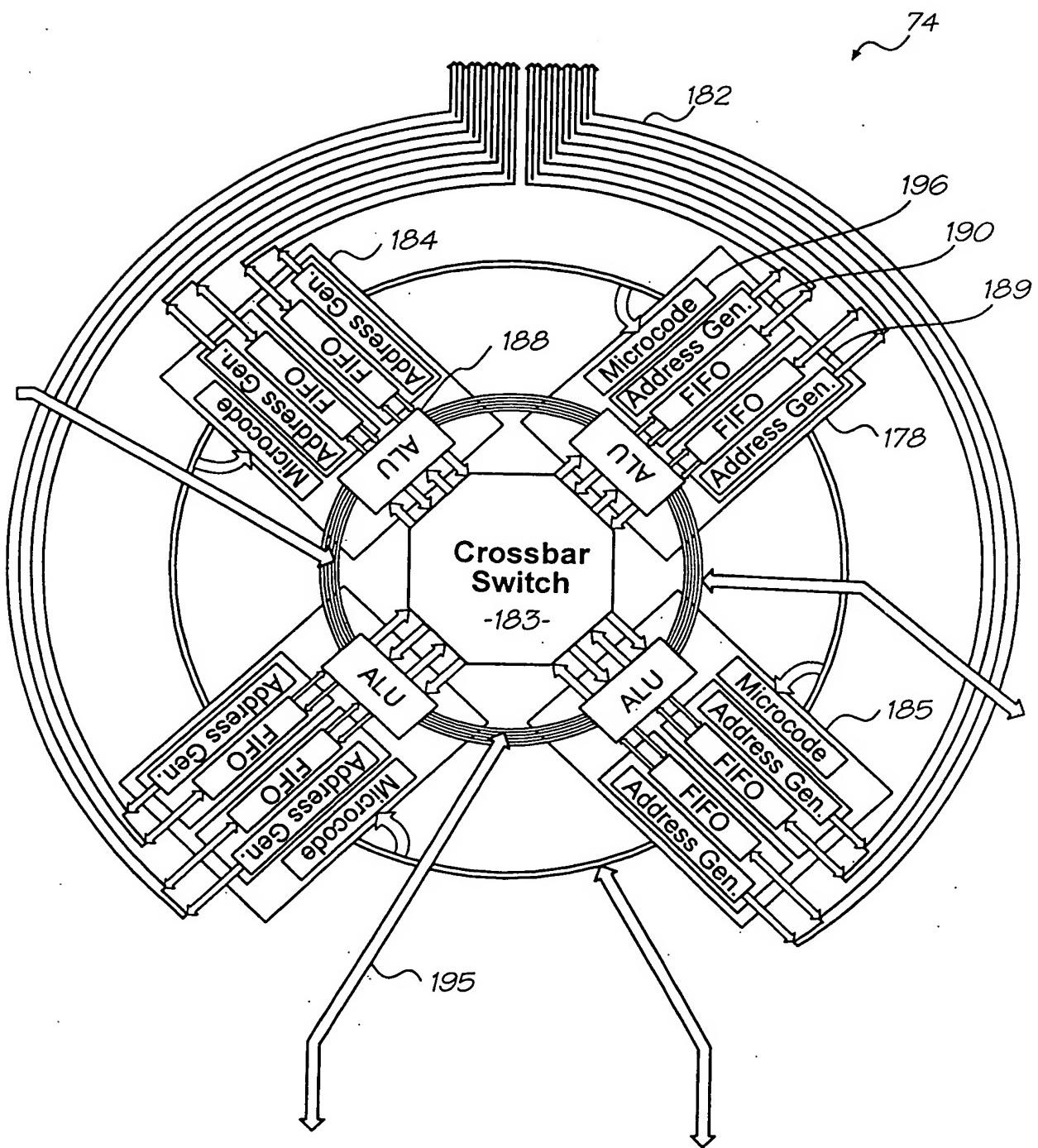


FIG. 3(a)

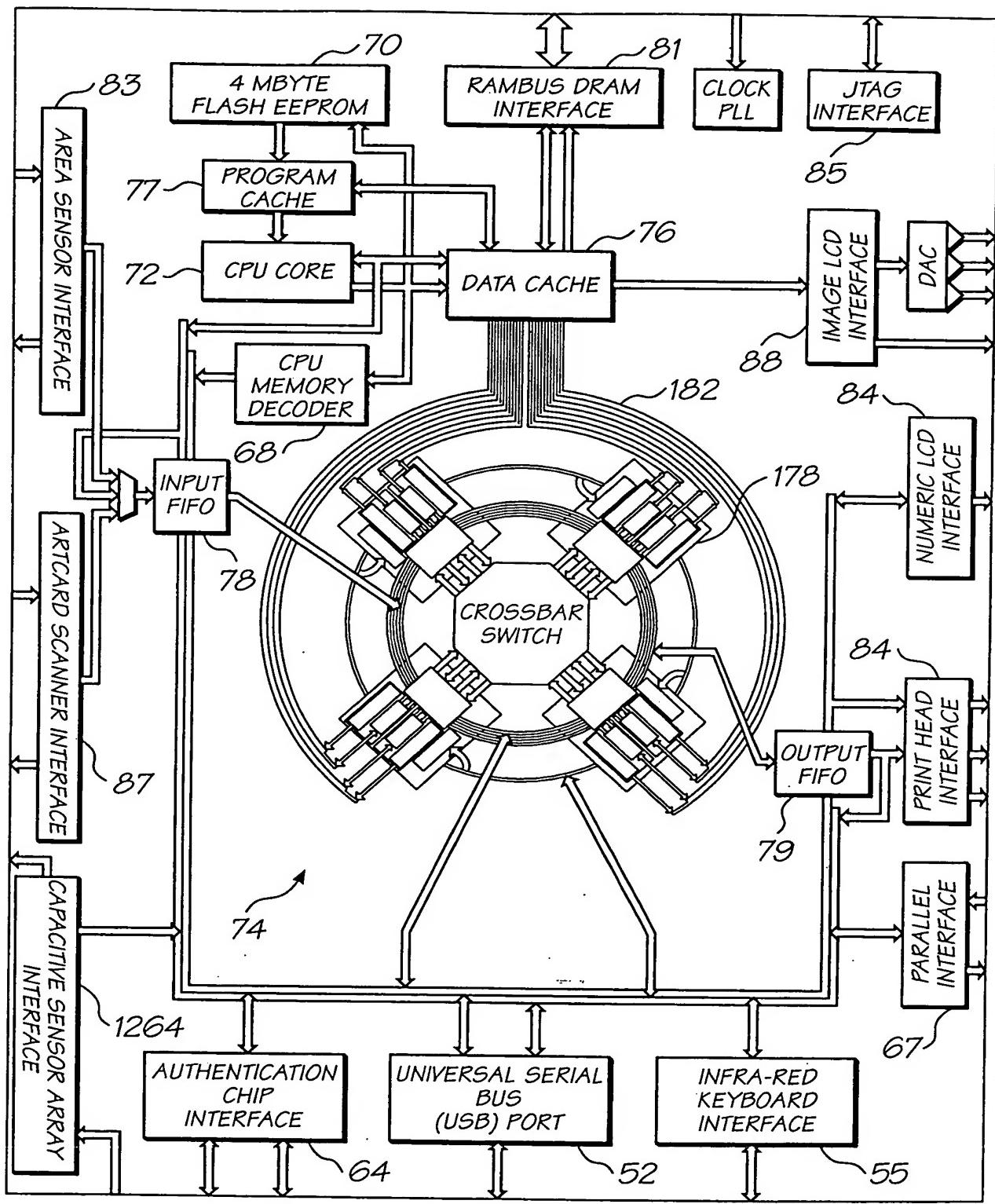
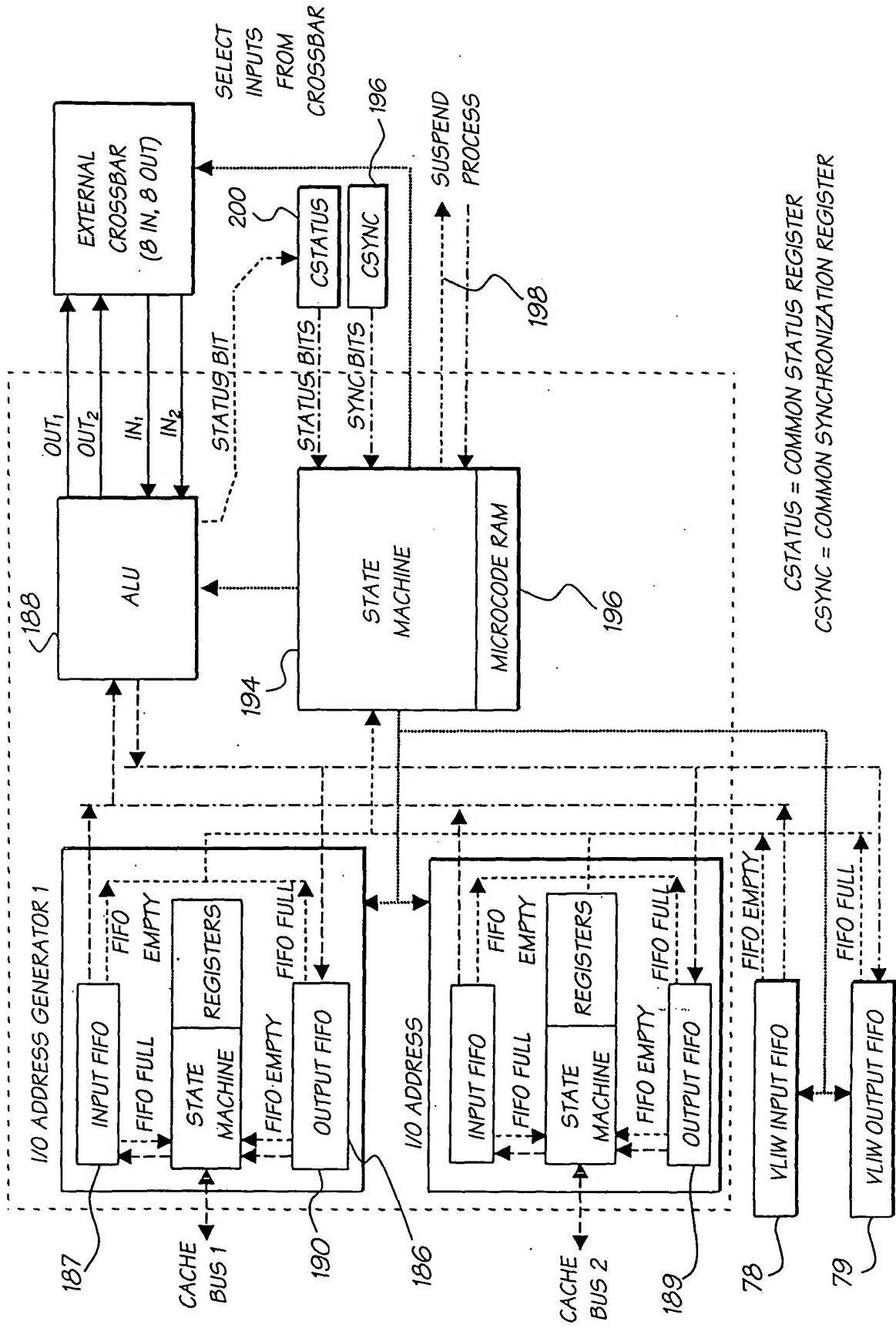


FIG. 3A

FIG. 4



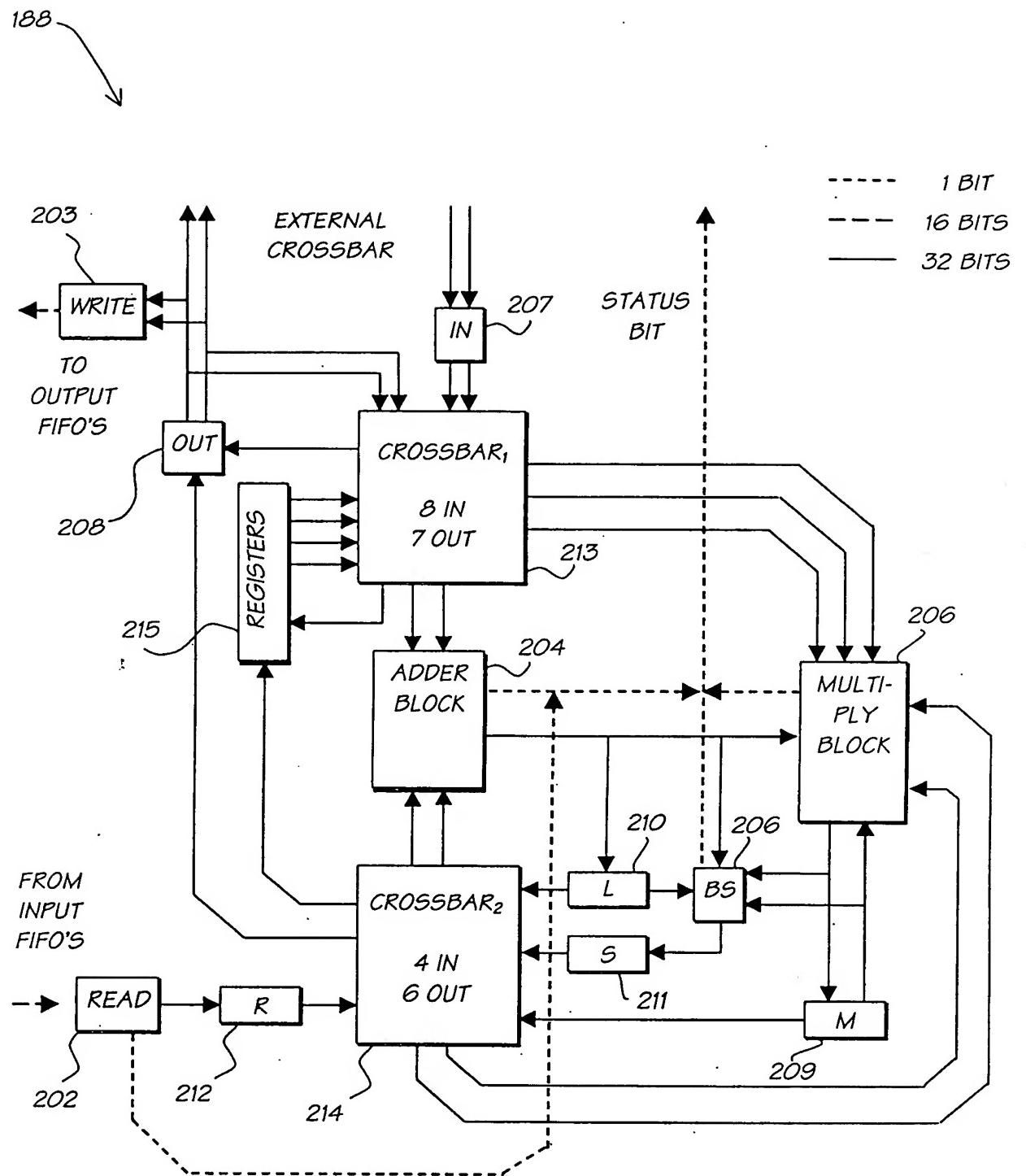


FIG. 5

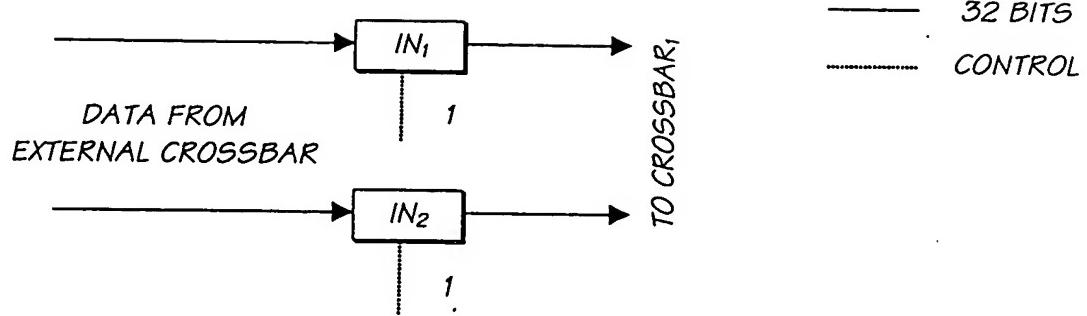


FIG. 6

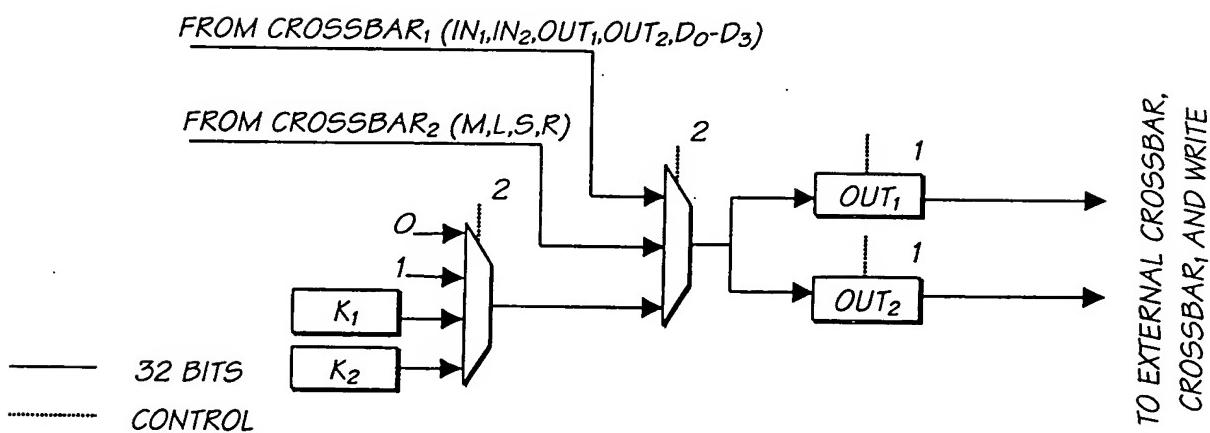


FIG. 7

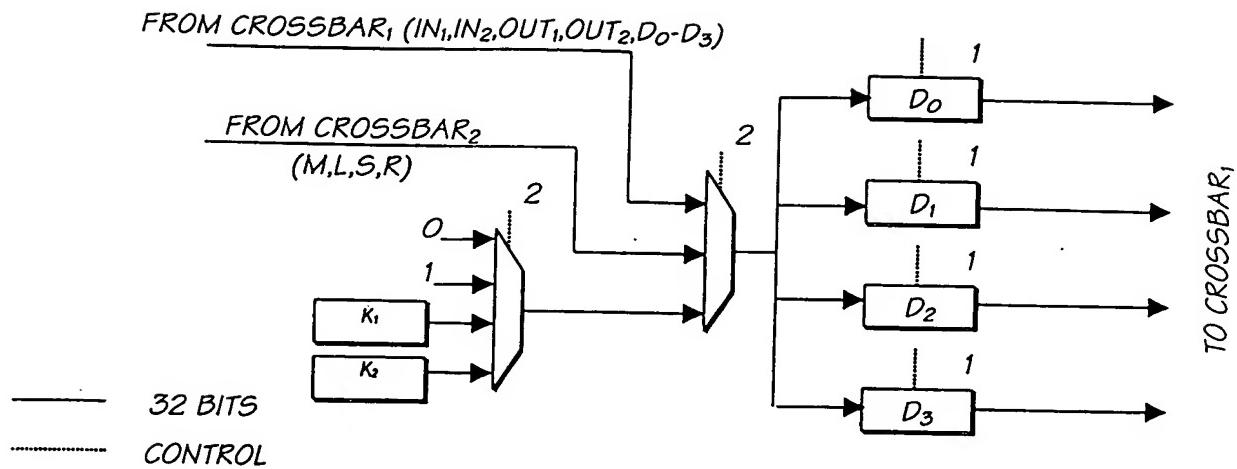


FIG. 8

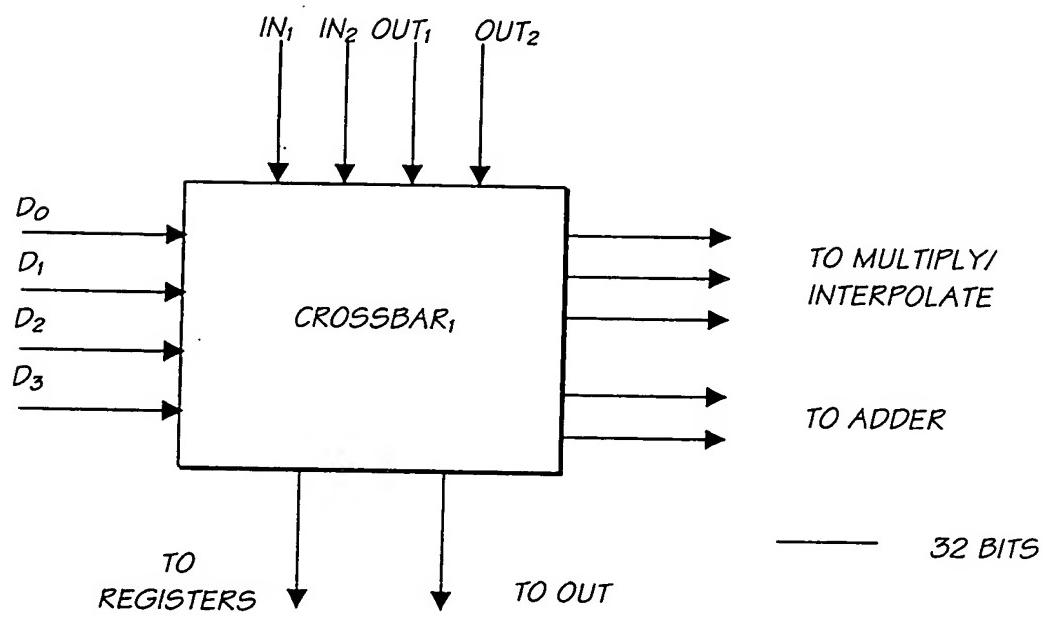


FIG. 9

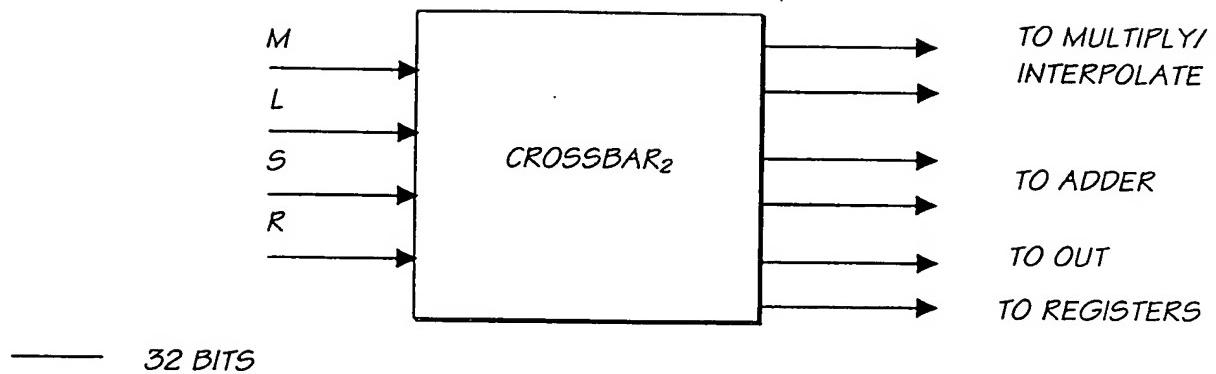


FIG. 10

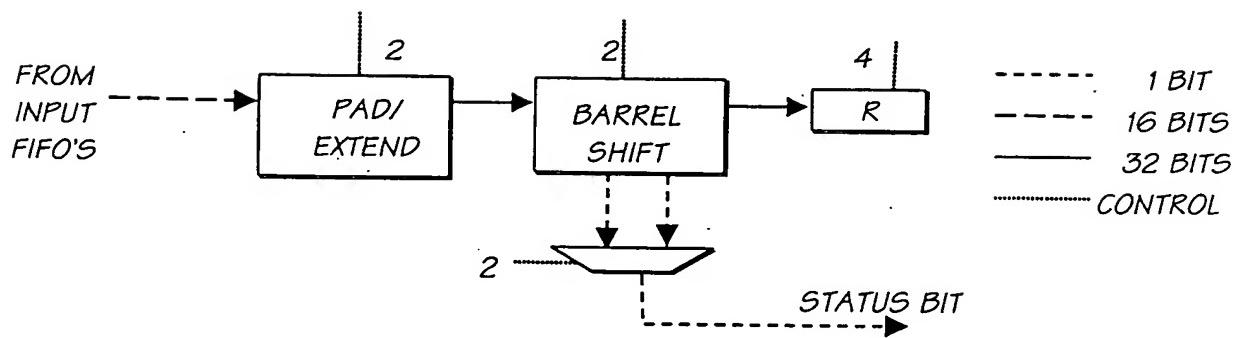


FIG. 11

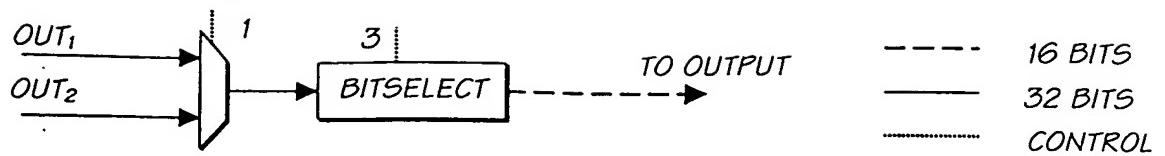


FIG. 12

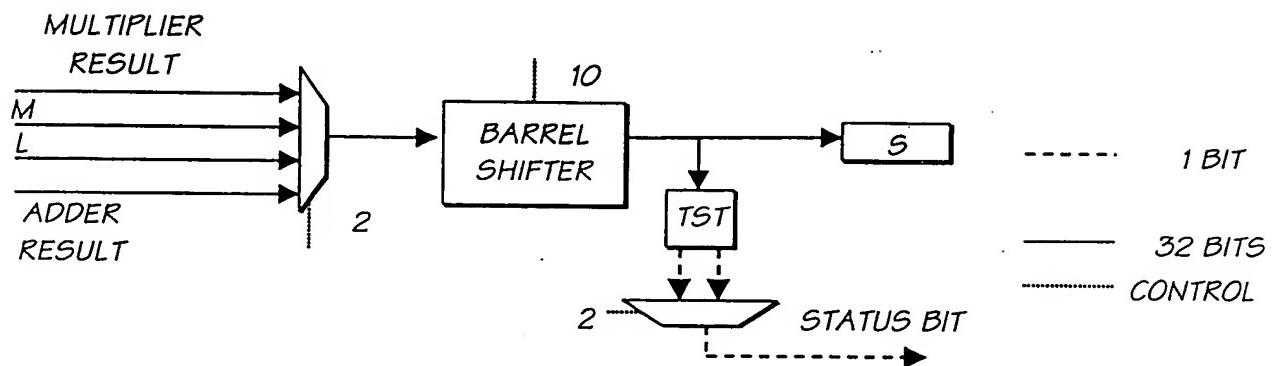


FIG. 13

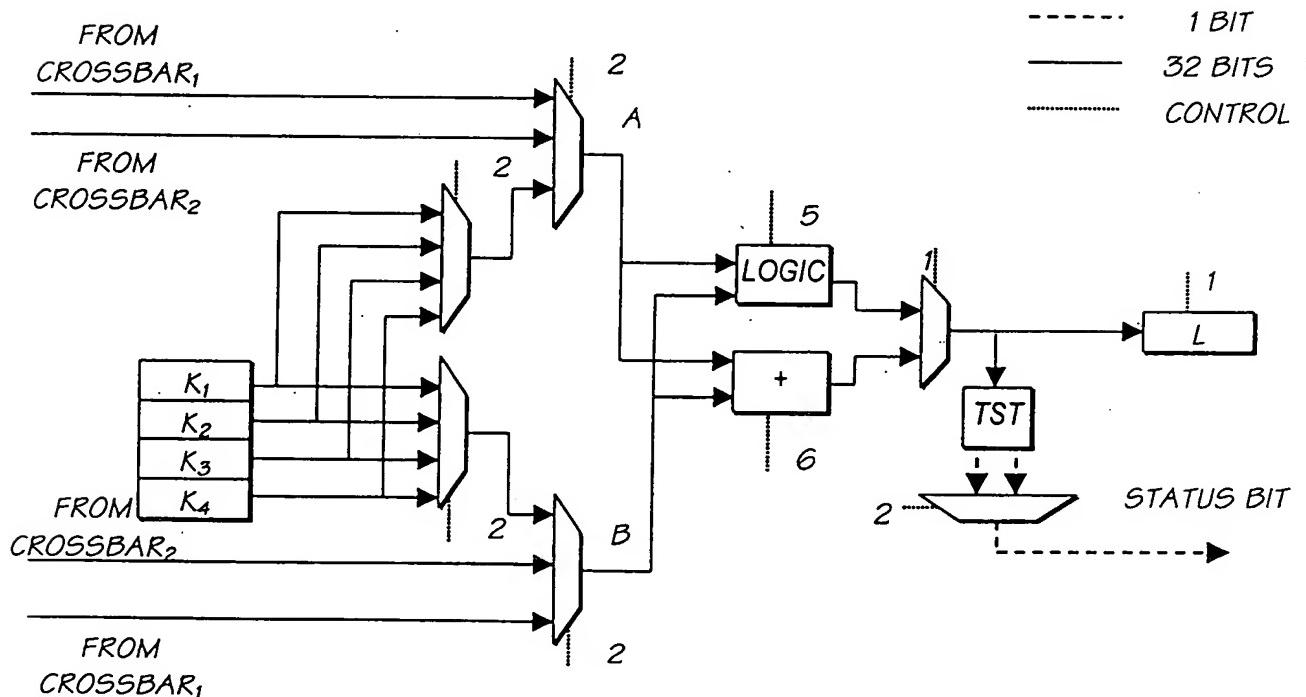


FIG. 14

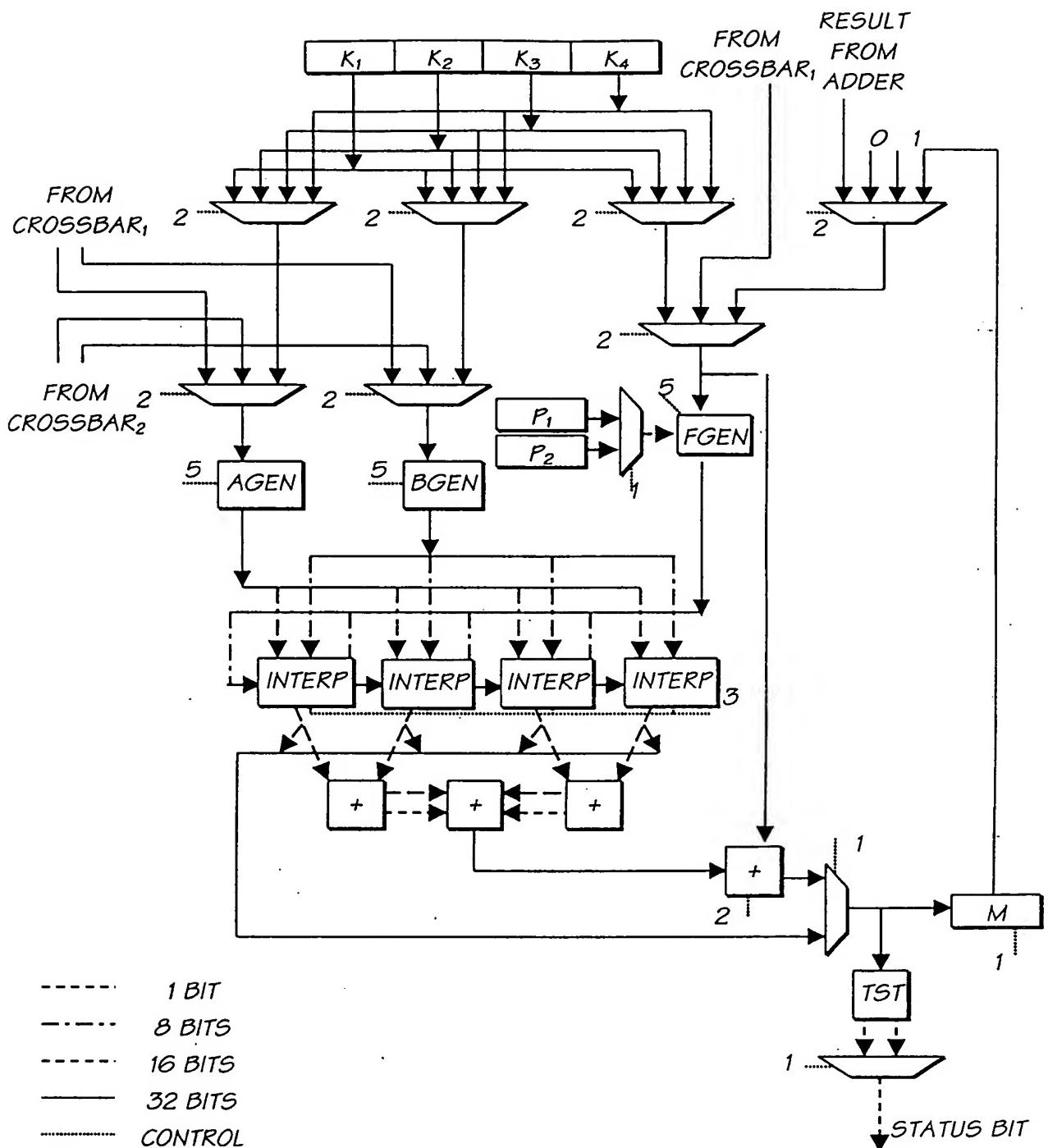


FIG. 15

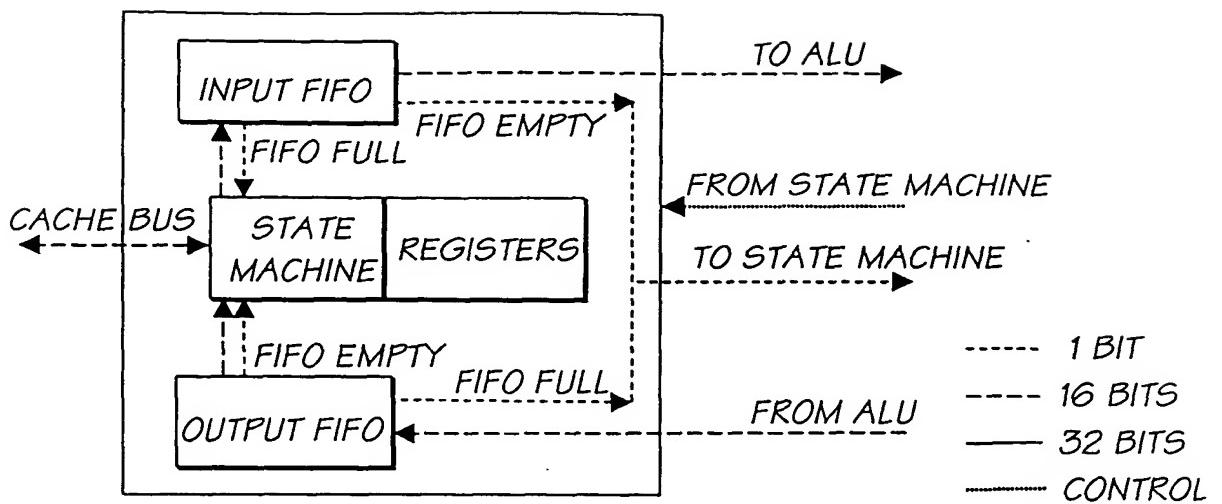


FIG. 16

ORDER OF PIXELS PRESENTED BY A SEQUENTIAL READ ITERATOR
ON A 4×2 IMAGE WITH PADDING.

0	1	2	3	
4	5	6	7	

FIG. 17

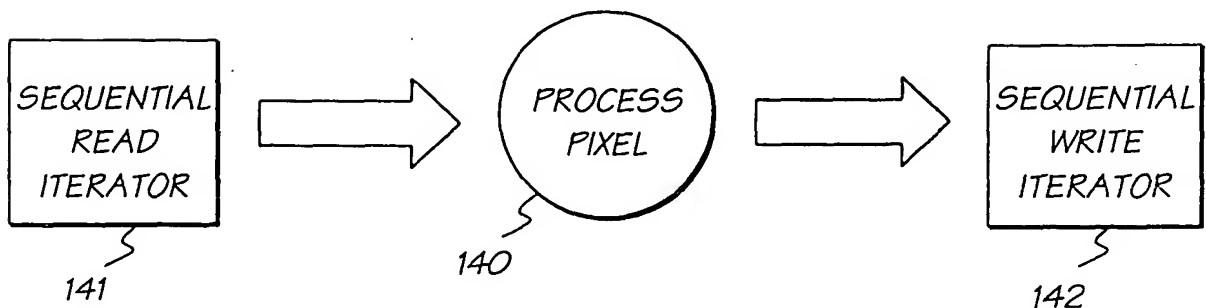
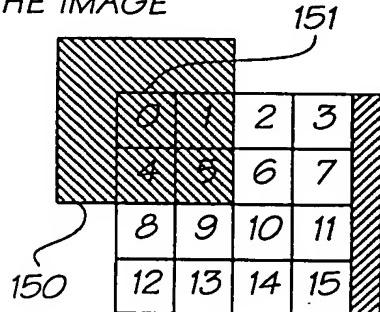


FIG. 18

A 3×3 BOX VIEW TRAVERSES THE PIXELS IN ORDER: 0, 1, 2, 3, 4, 5, 6, 7, 8 ETC, PLACING A 3×3 BOX CENTERED OVER EACH PIXEL...

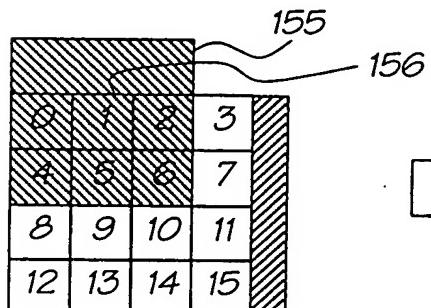
3×3 BOX VIEW OF FIRST
PIXEL IN IMAGE = 9 PIXELS,
5 OF WHICH ARE OUTSIDE
THE IMAGE



FIRST 9 PIXELS FROM THE BOX
READ ITERATOR:

152 → IF DUPLICATION OF EDGE PIXELS IS ON: 0, 0, 0, 0, 0, 1, 4, 4, 5
IF DUPLICATION OF EDGE PIXELS IS OFF: V, V, V, V, O, 1, V, 4, 5
WHERE V IS CONSTANTPIXEL
REGISTER VALUE REPRESENTING "OUTSIDE THE IMAGE"

3×3 BOX VIEW OF
SECOND PIXEL IN IMAGE
= 9 PIXELS,
3 OF WHICH ARE
OUTSIDE THE IMAGE



SECOND 9 PIXELS FROM THE BOX
READ ITERATOR:

153 → IF DUPLICATION OF EDGE PIXELS IS ON: 0, 1, 2, 0, 1, 2, 4, 5, 6
IF DUPLICATION OF EDGE PIXELS IS OFF: V, V, V, O, 1, 2, 4, 5, 6
WHERE V IS CONSTANTPIXEL
REGISTER VALUE REPRESENTING "OUTSIDE THE IMAGE"

FIG. 19

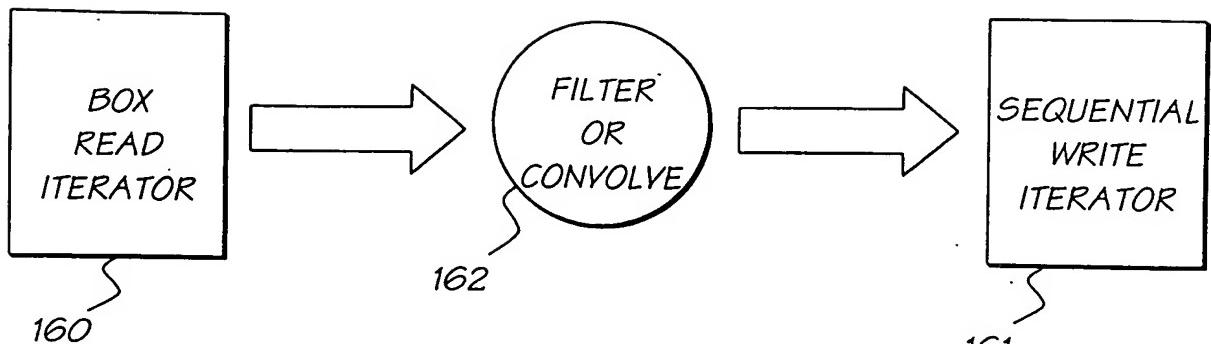
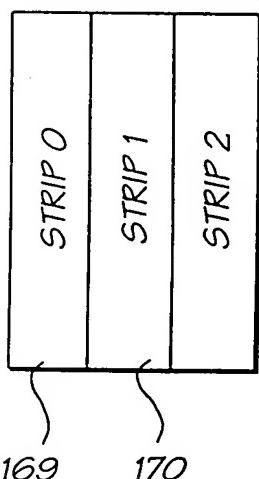
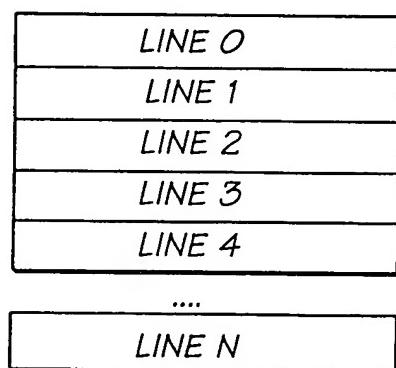


FIG. 20

IMAGE BROKEN INTO
VERTICAL STRIPS,
EACH STRIP IS 32
PIXELS ACROSS



LINES ARE ACCESSED
LINE 0 TO LINE N
WITHIN A SINGLE STRIP.



PIXELS ARE ACCESSED
PIXEL 0 - PIXEL 31
WITHIN A SINGLE LINE

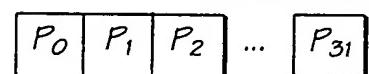


FIG. 21

'RANDOM
ACCESS'
READER

CALCULATE
OUTPUT
PIXELS

VERTICAL-
STRIP
WRITE
ITERATOR

FIG. 22

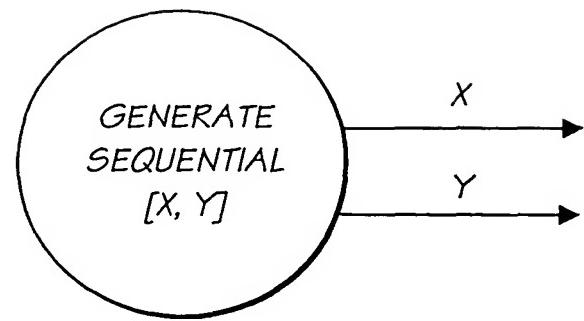


FIG. 23

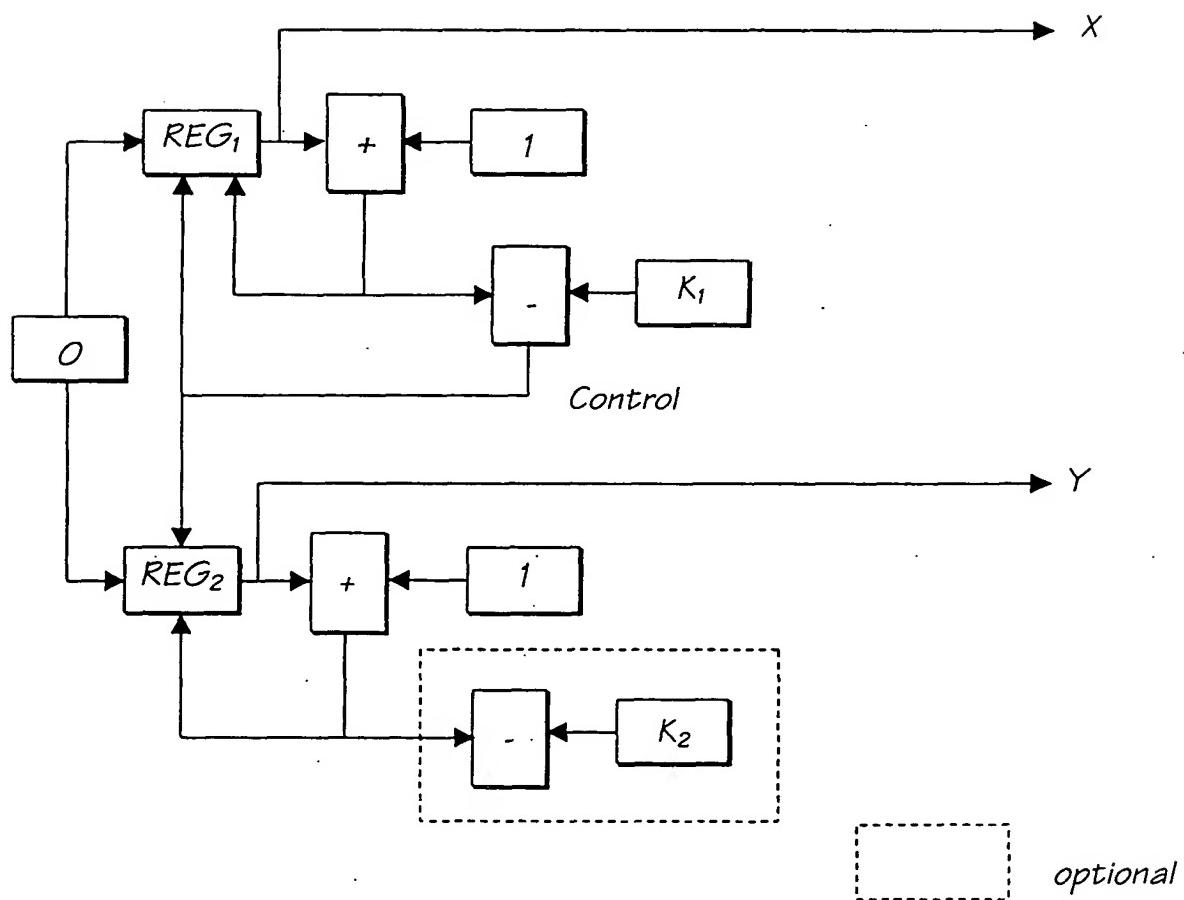


FIG. 24

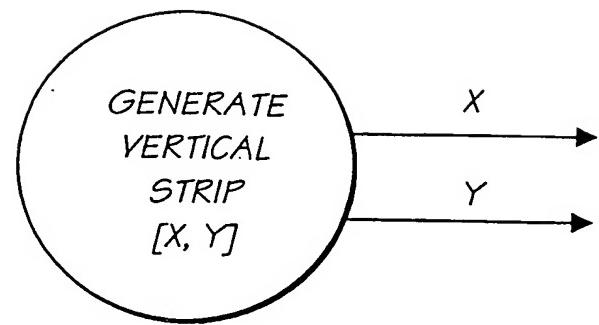


FIG. 25

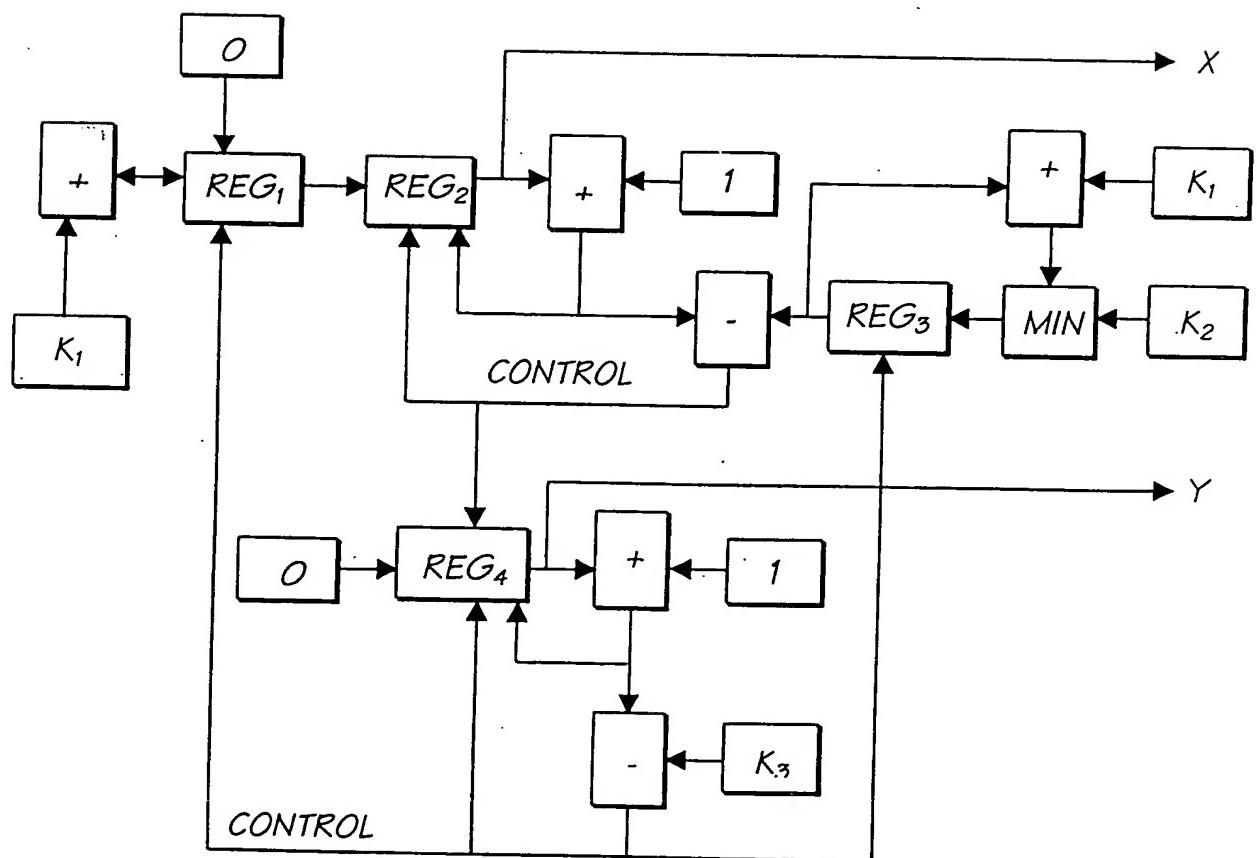
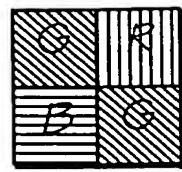


FIG. 26



2X2 PIXEL BLOCK FROM SENSOR

FIG. 27

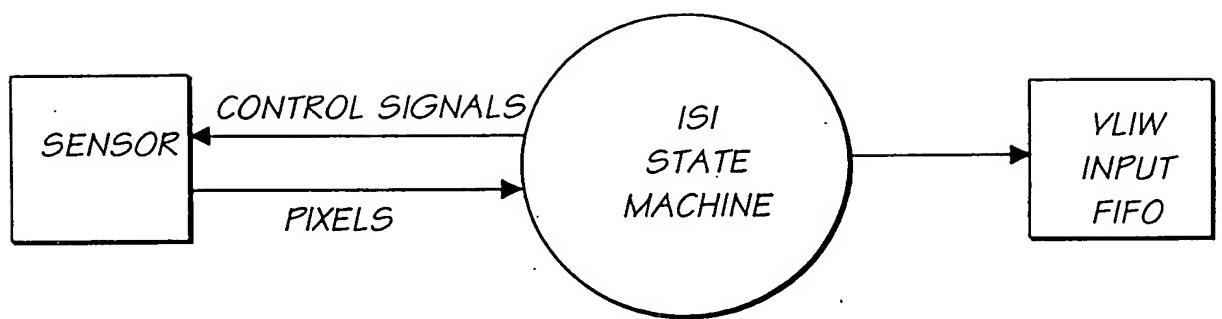


FIG. 28

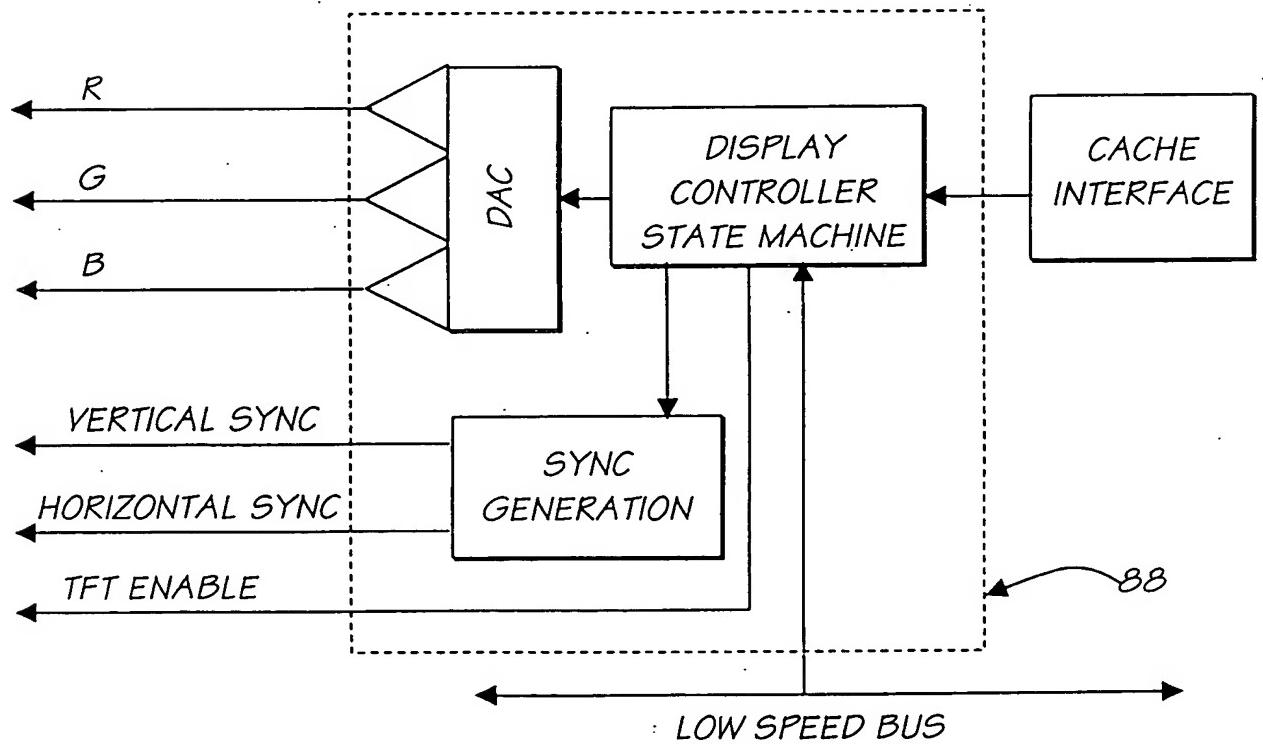
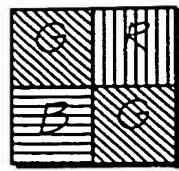


FIG. 29



2X2 PIXEL BLOCK FROM CCD

FIG. 30

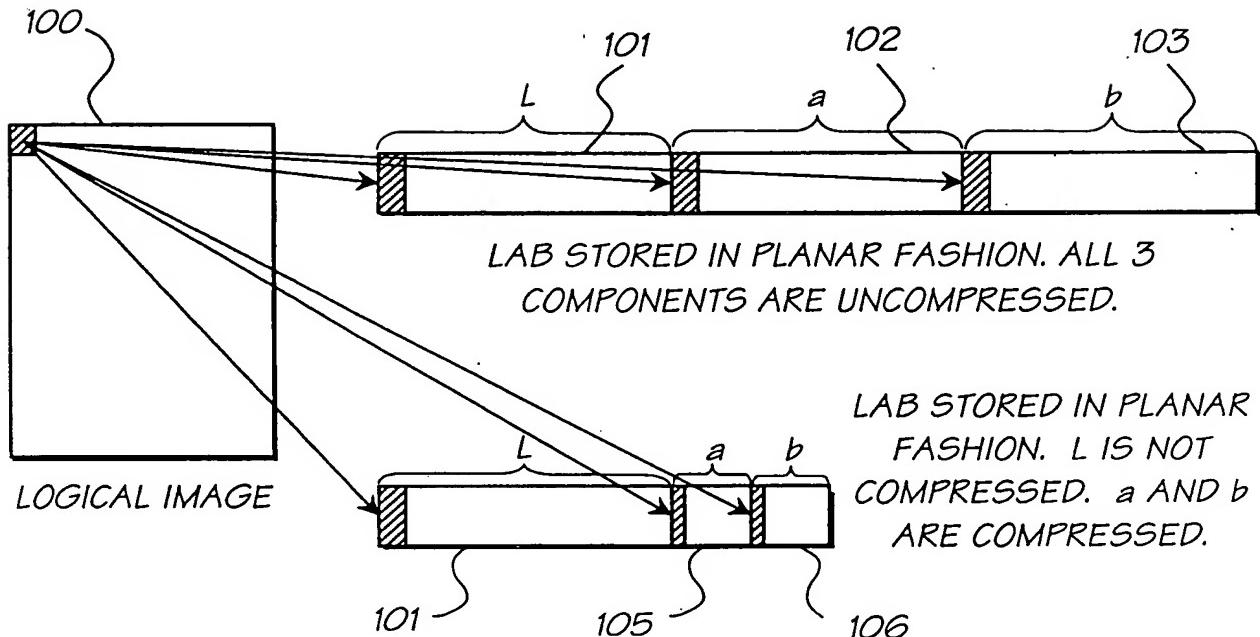


FIG. 31

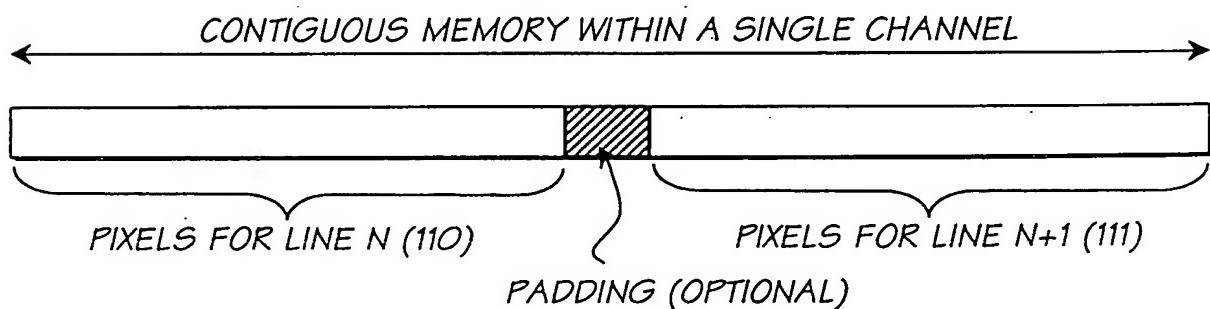


FIG. 32

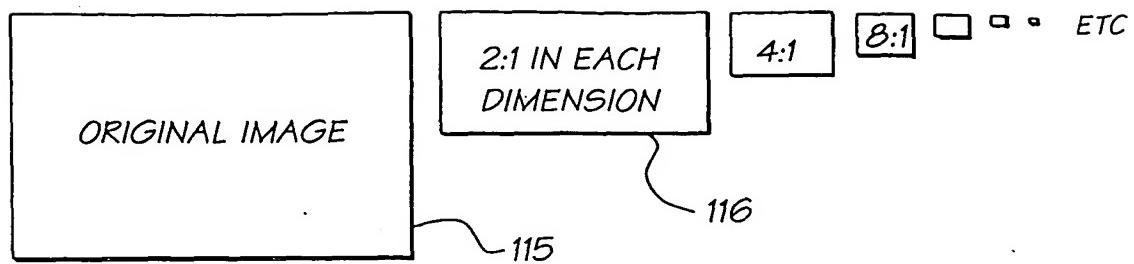


FIG. 33

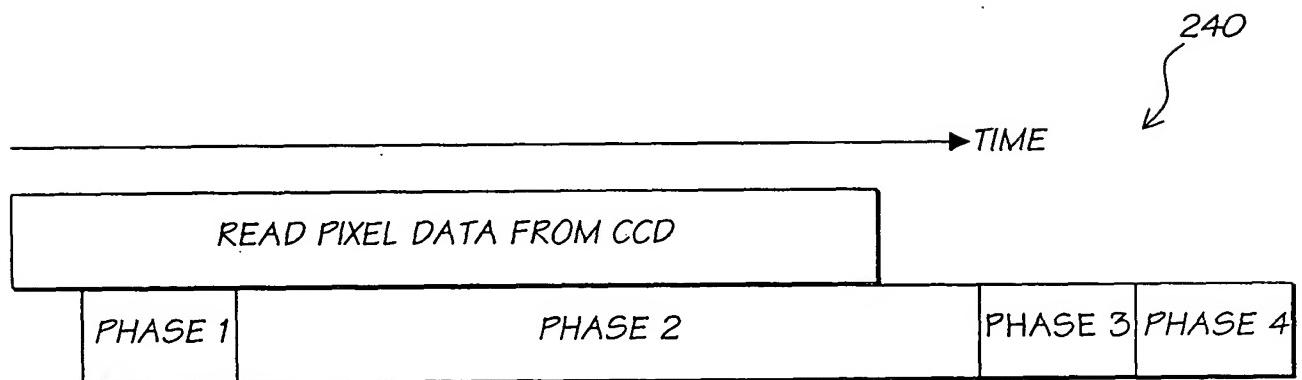


FIG. 34

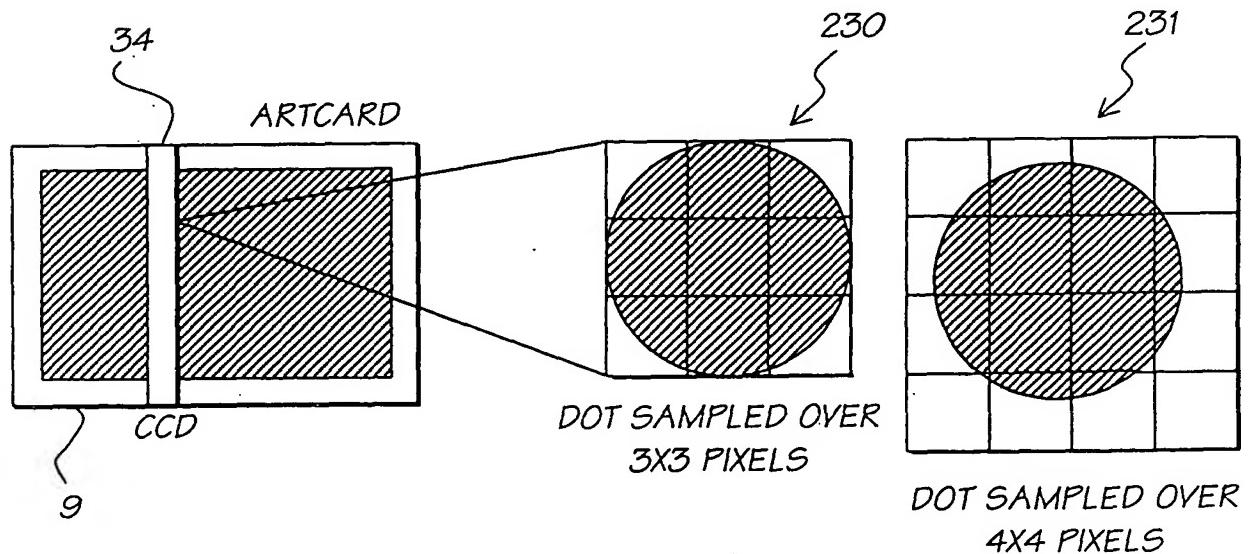
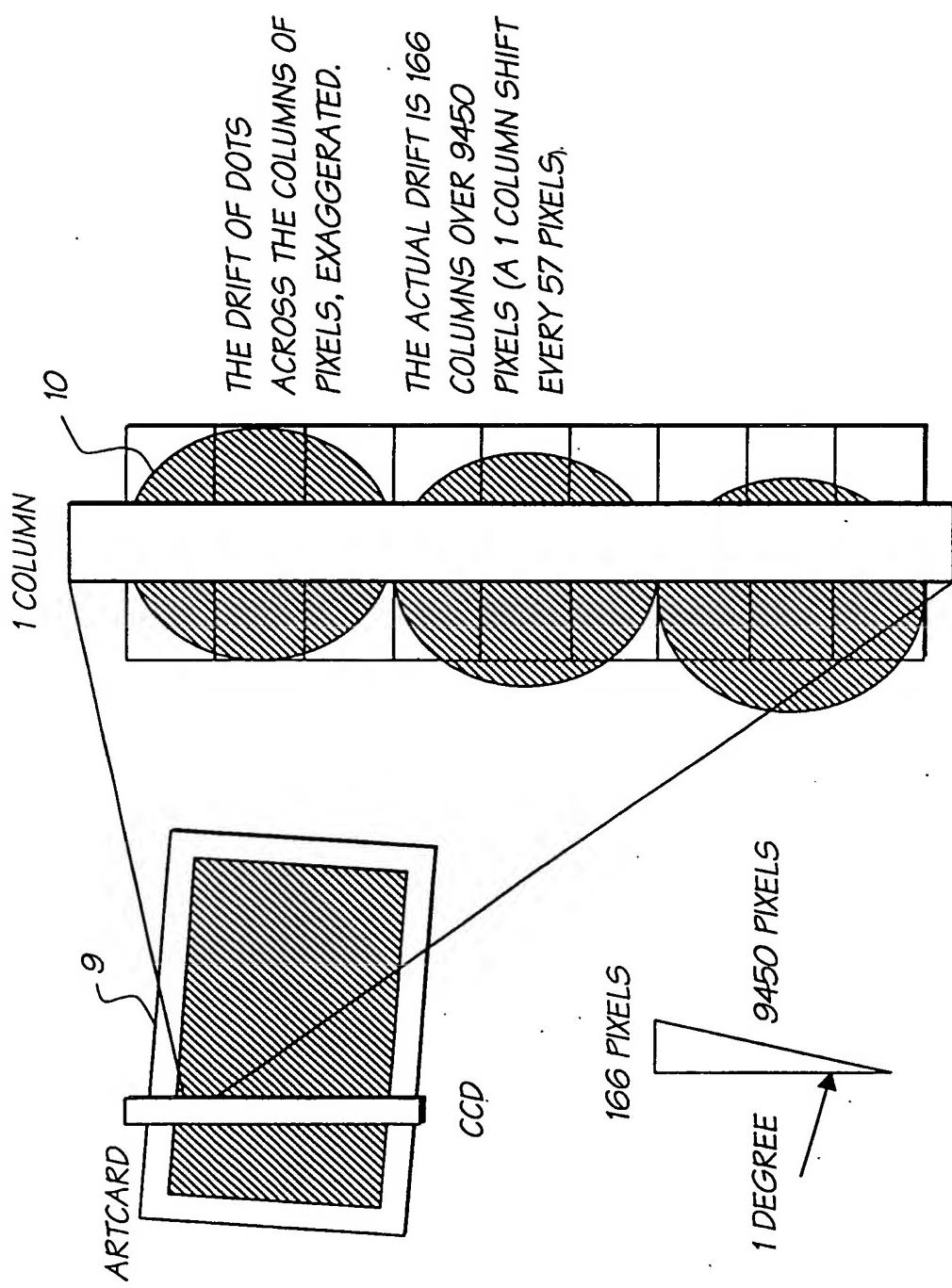


FIG. 35

FIG. 36



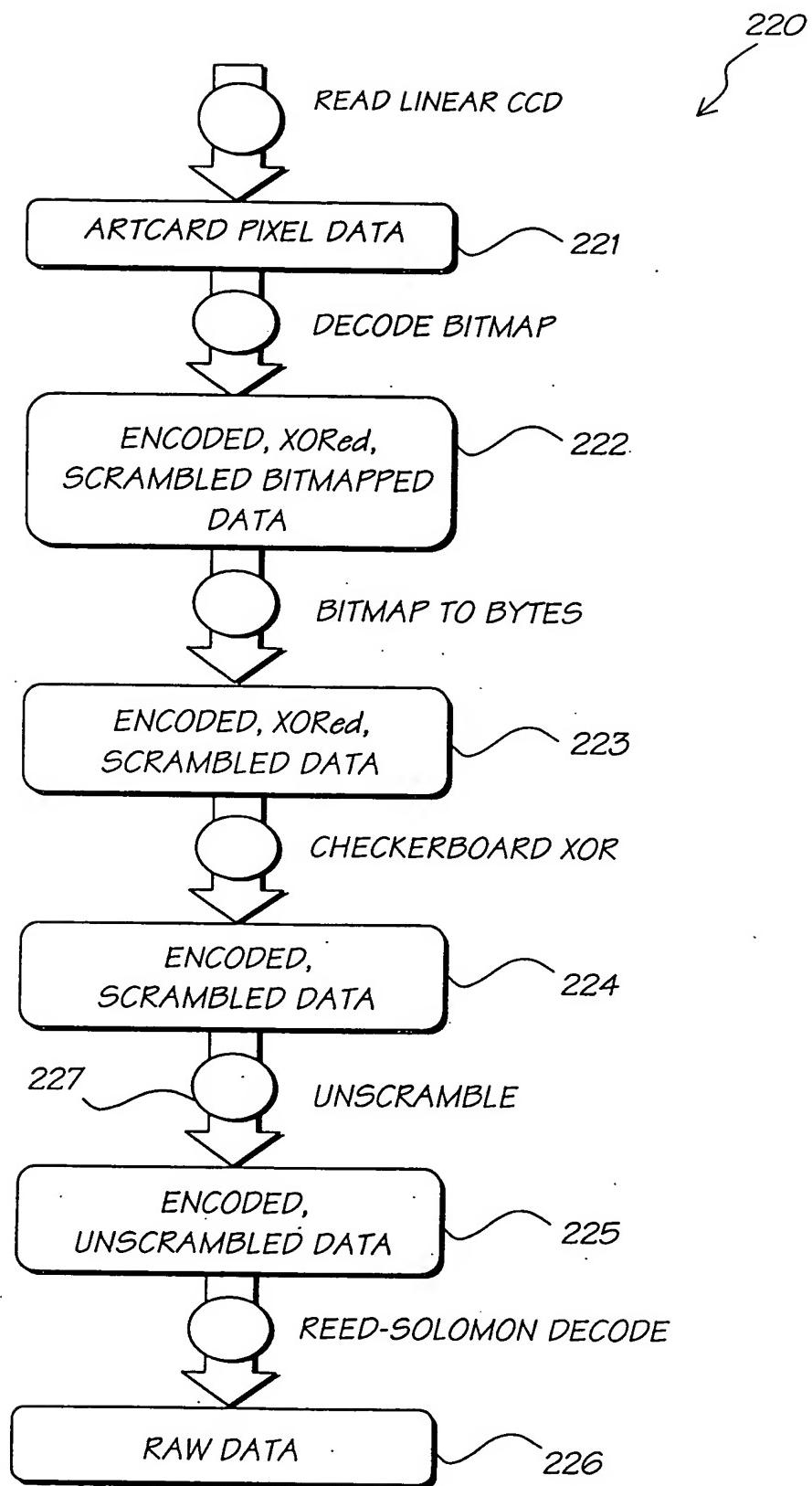
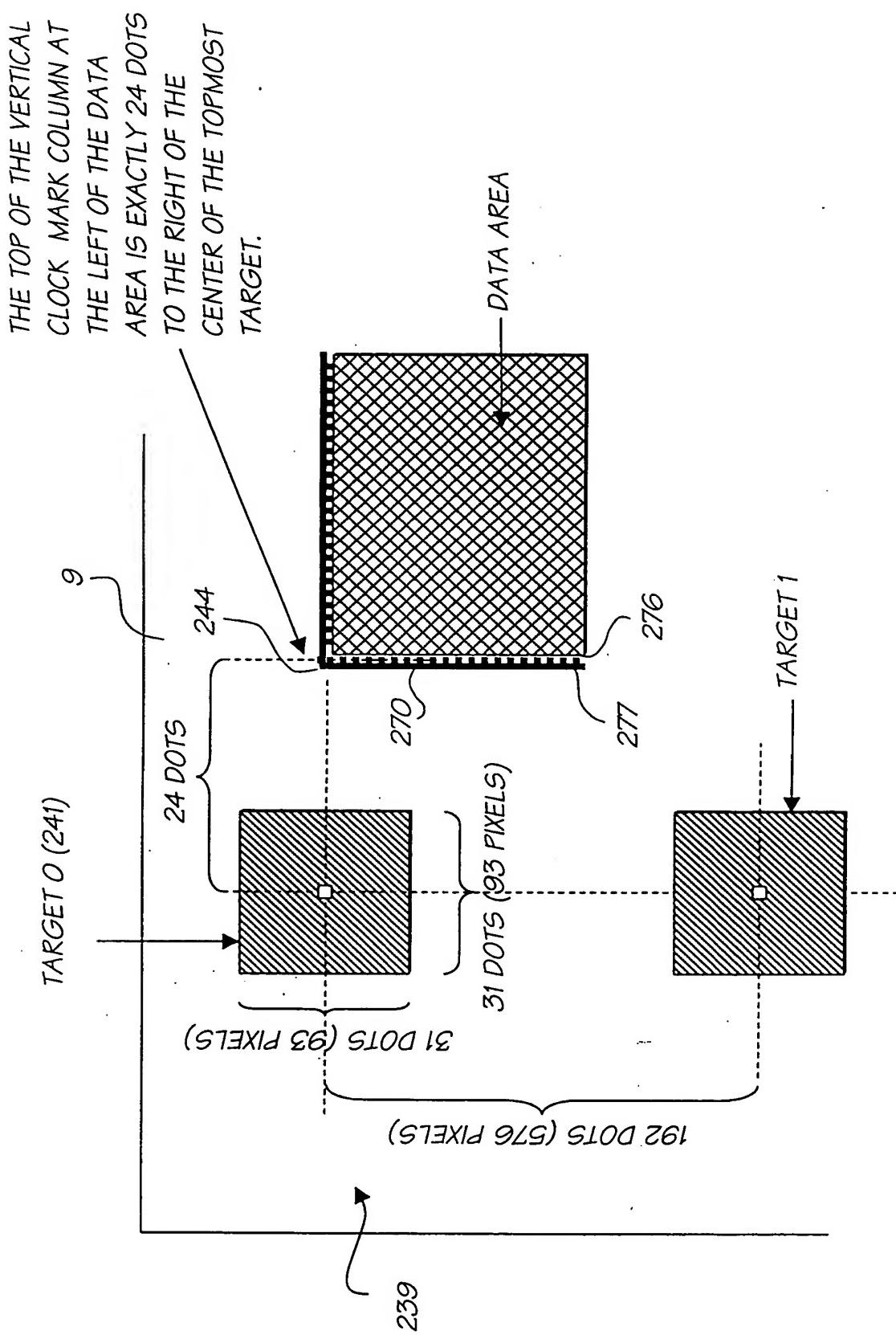


FIG. 37

FIG. 38



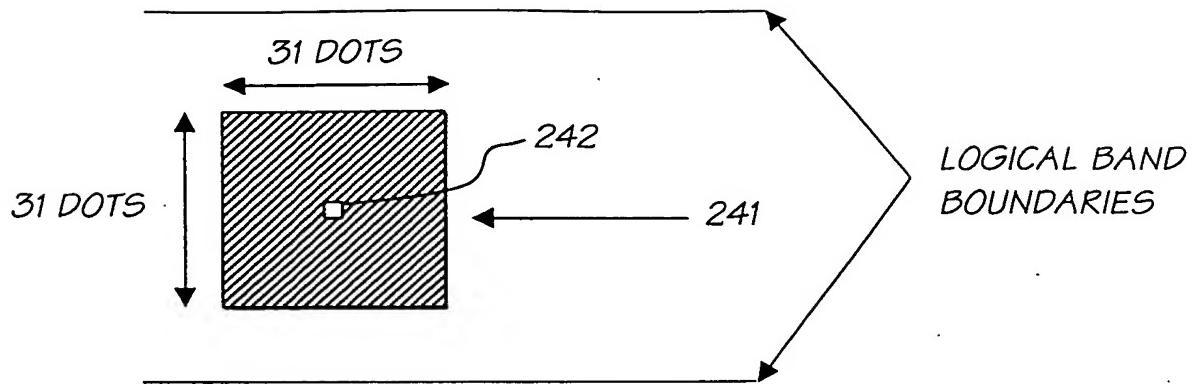


FIG. 39

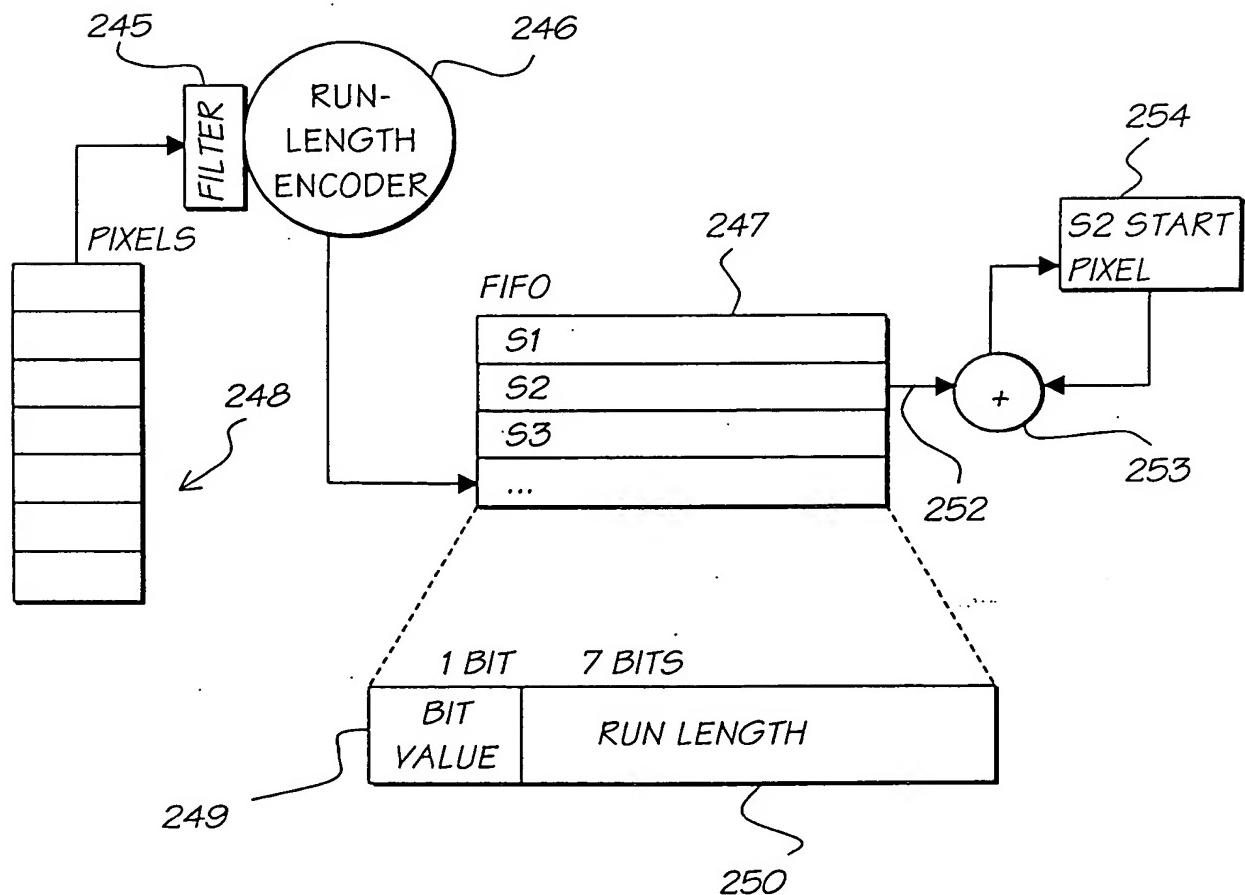


FIG. 40

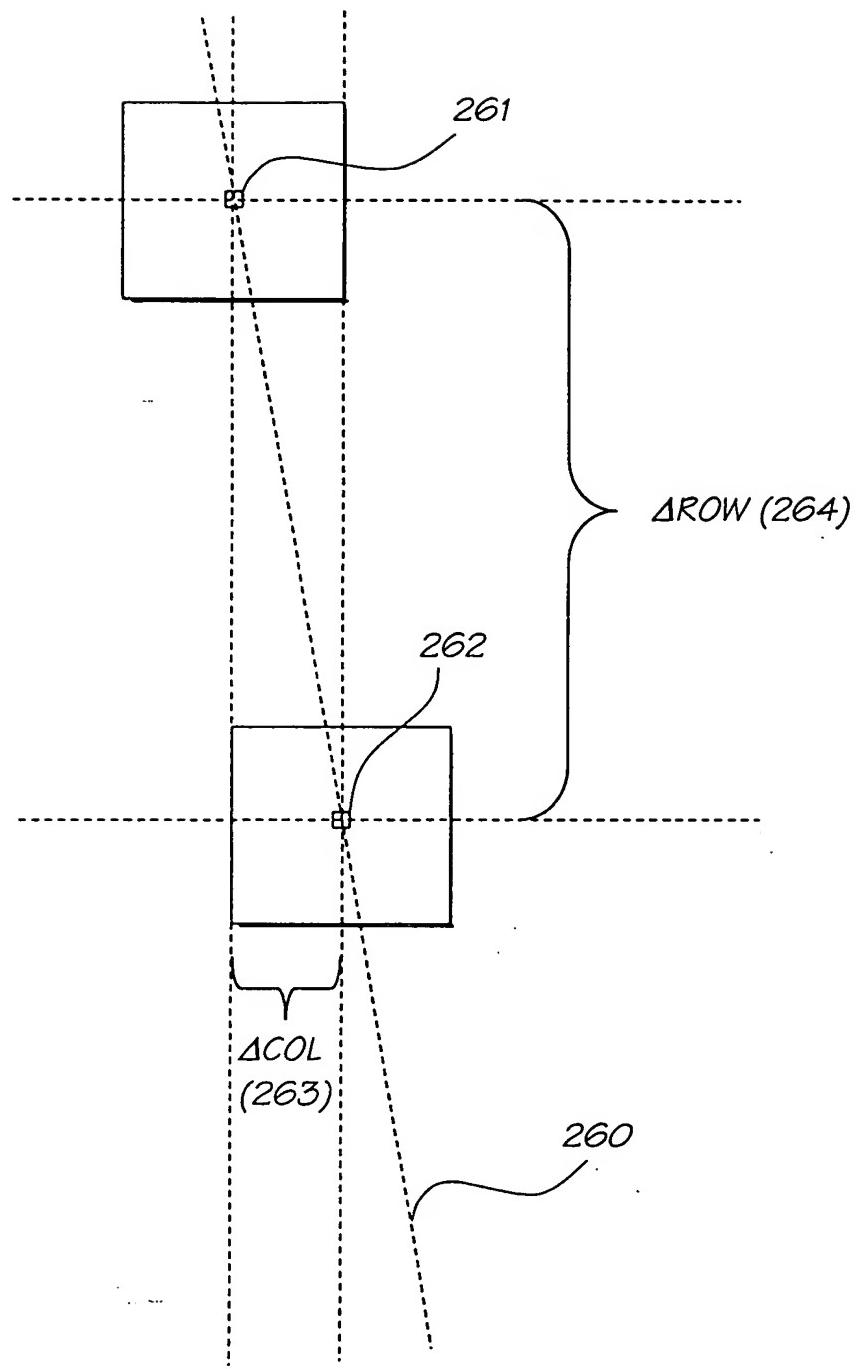
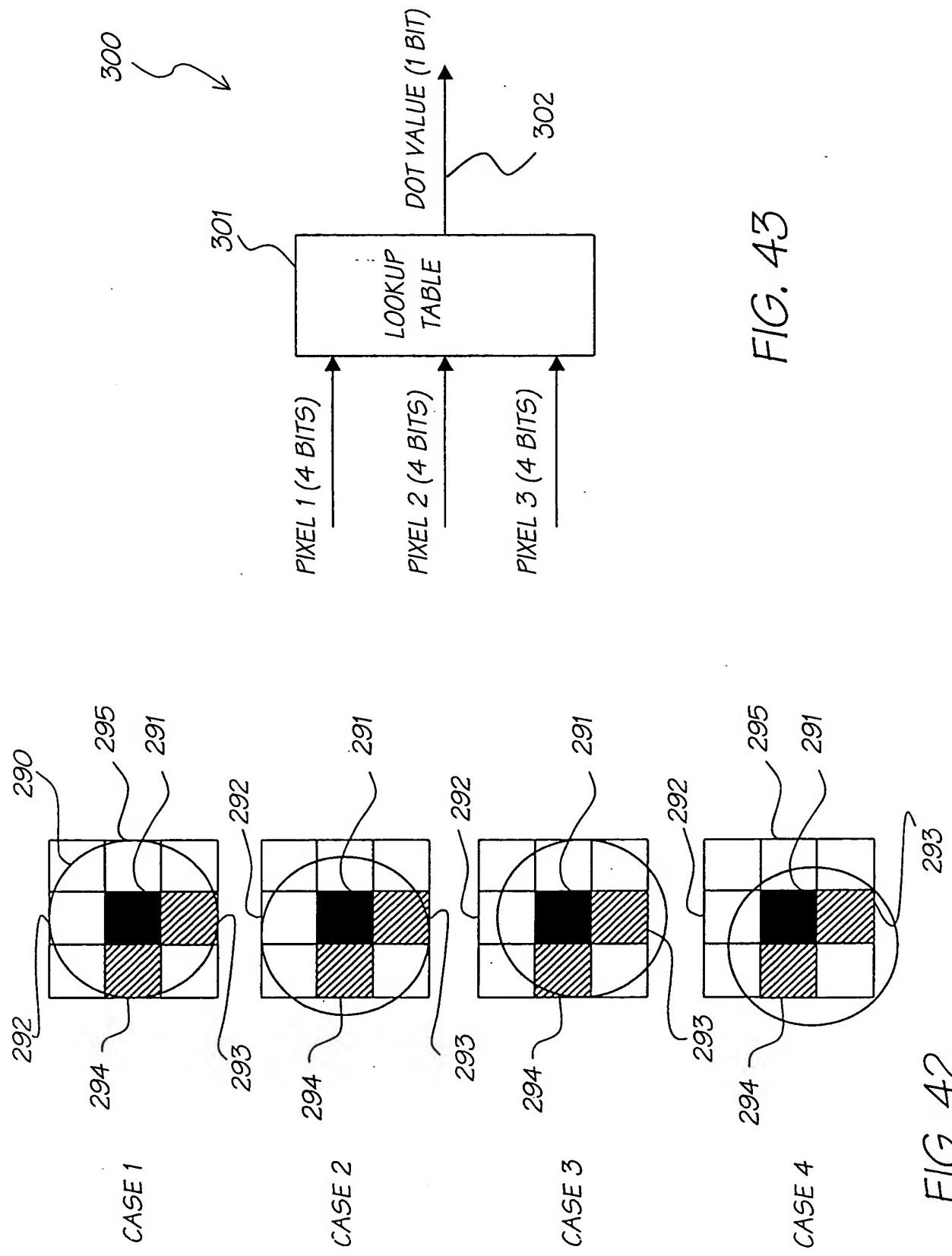


FIG. 41



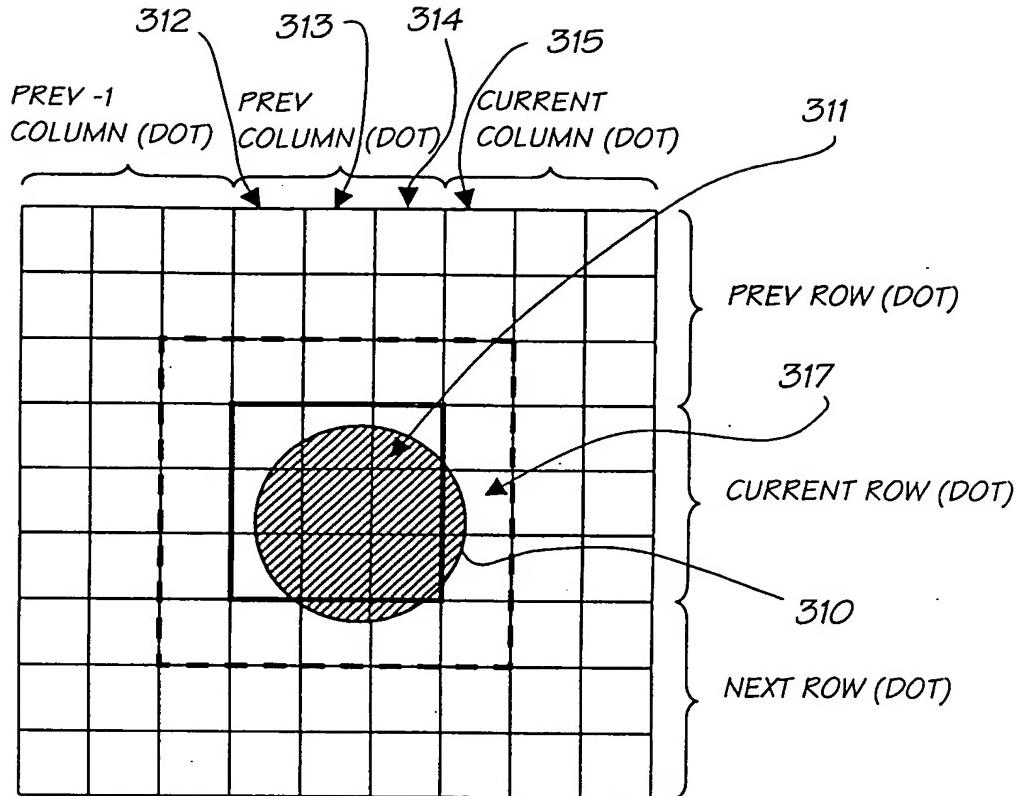


FIG. 44

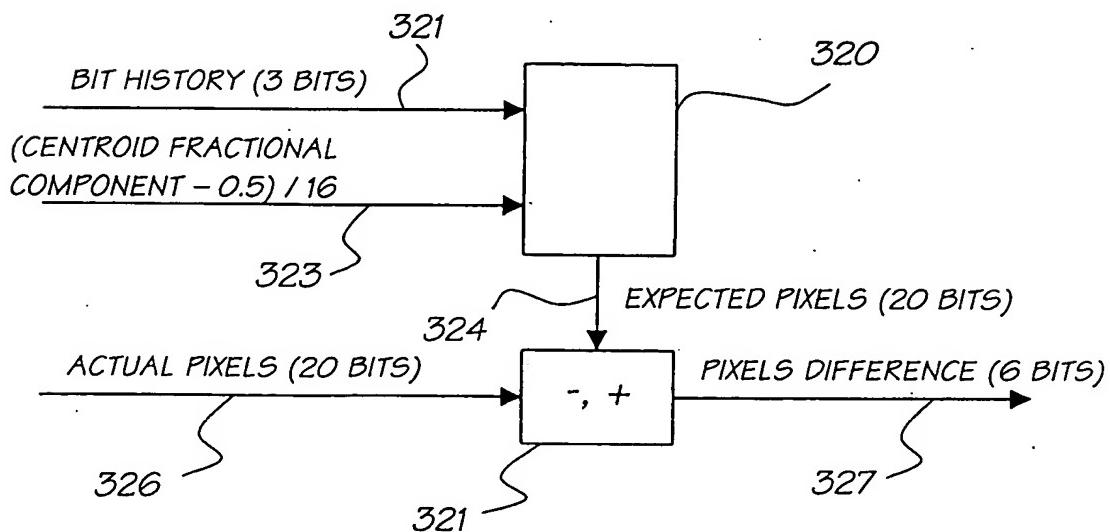
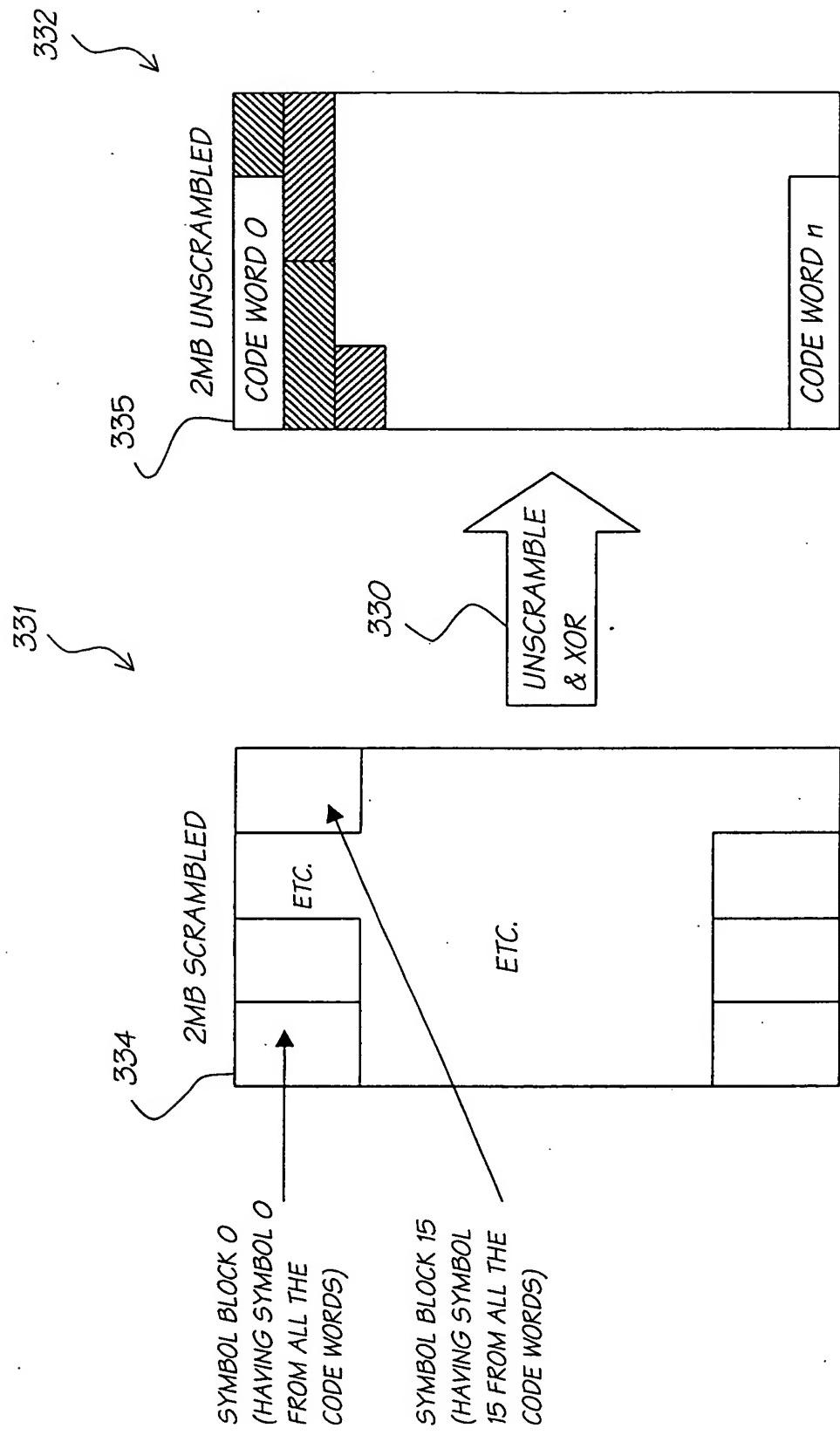


FIG. 45

FIG. 46



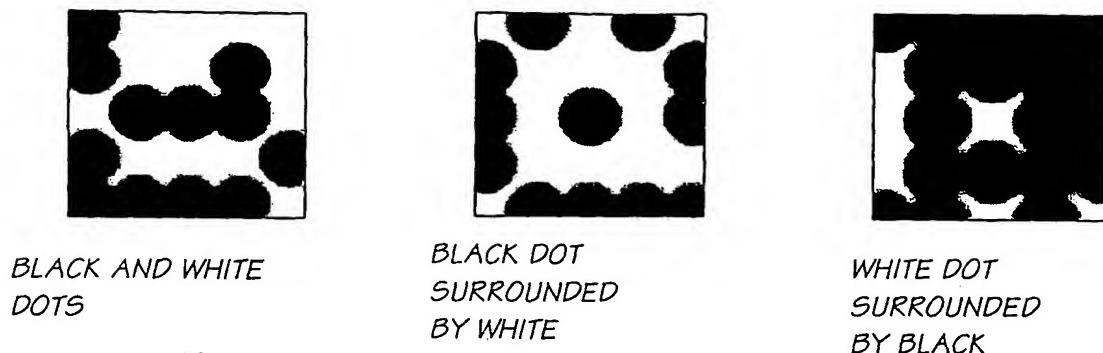


FIG. 47

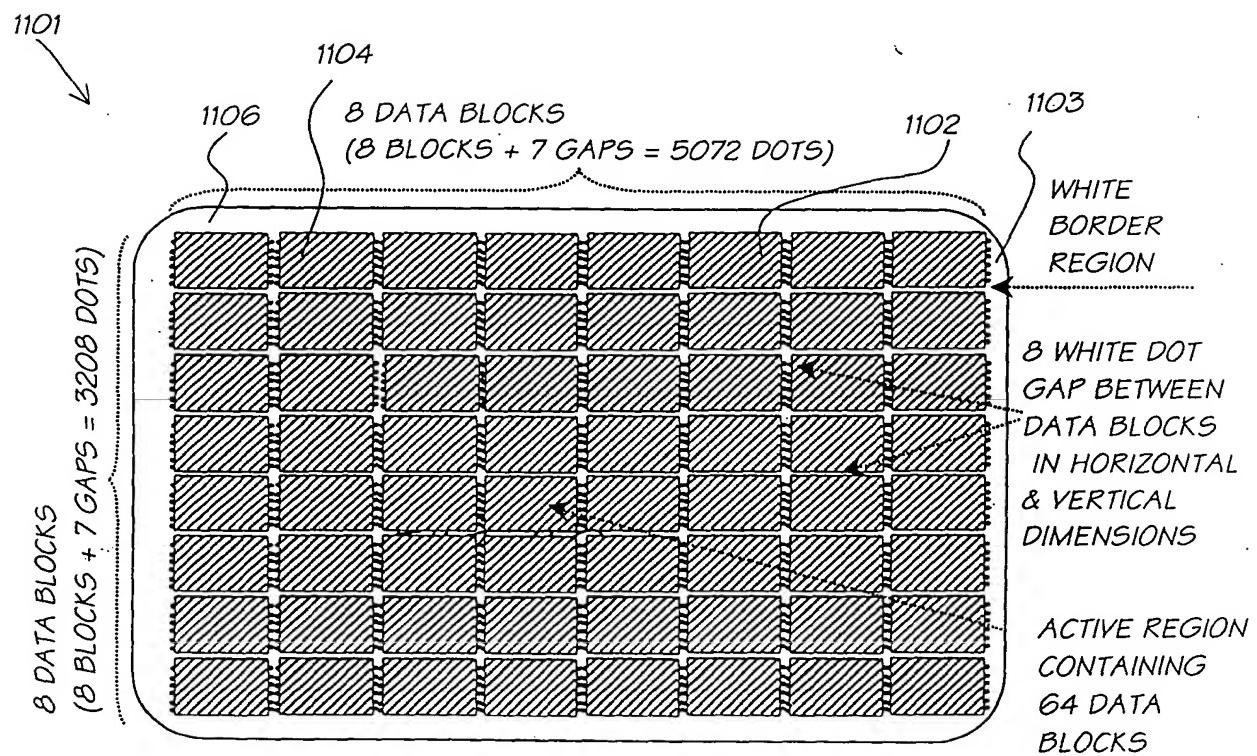


FIG. 48

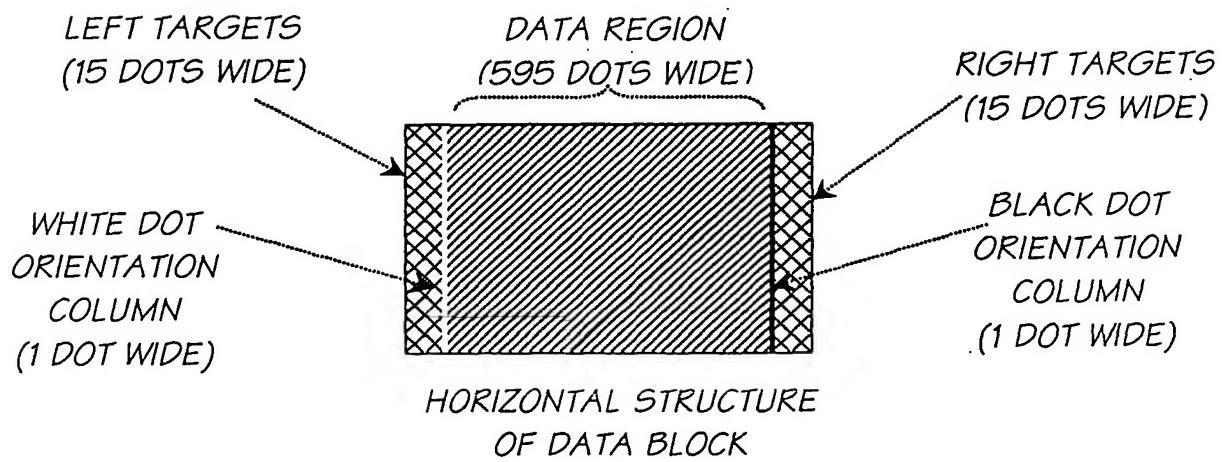
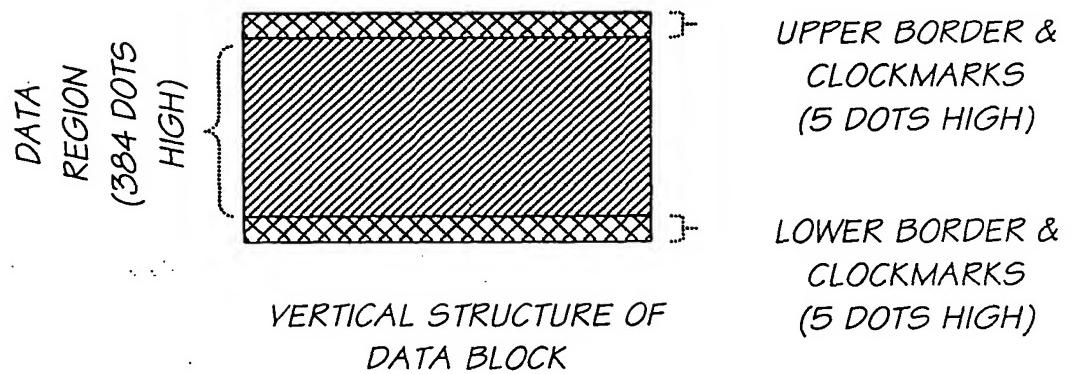
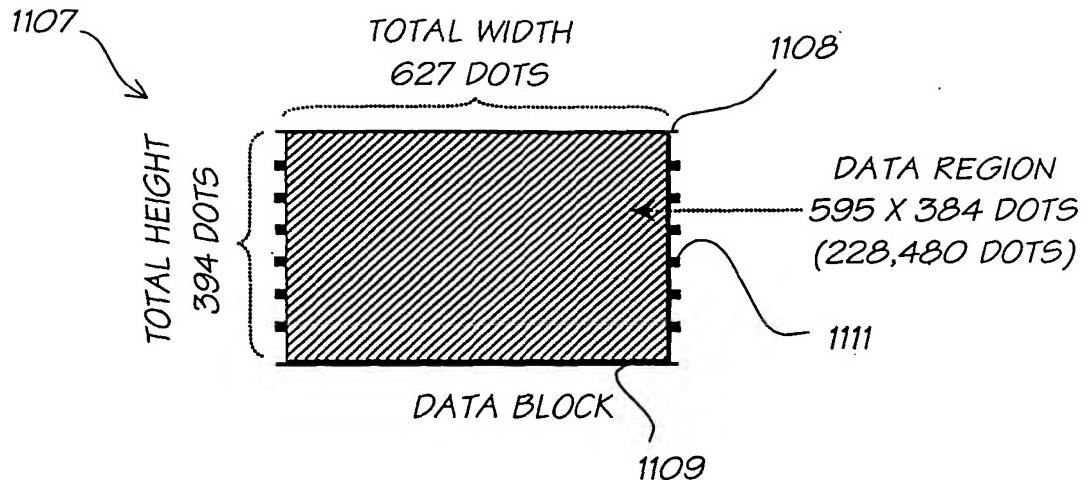


FIG. 49

FIG. 51

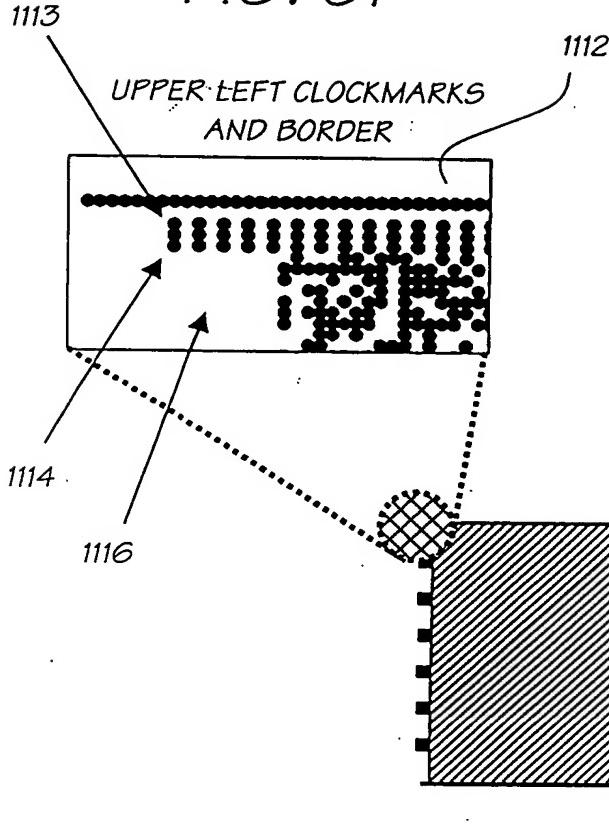
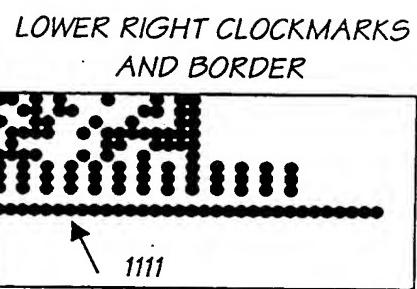


FIG. 52



↑
1107

FIG. 50

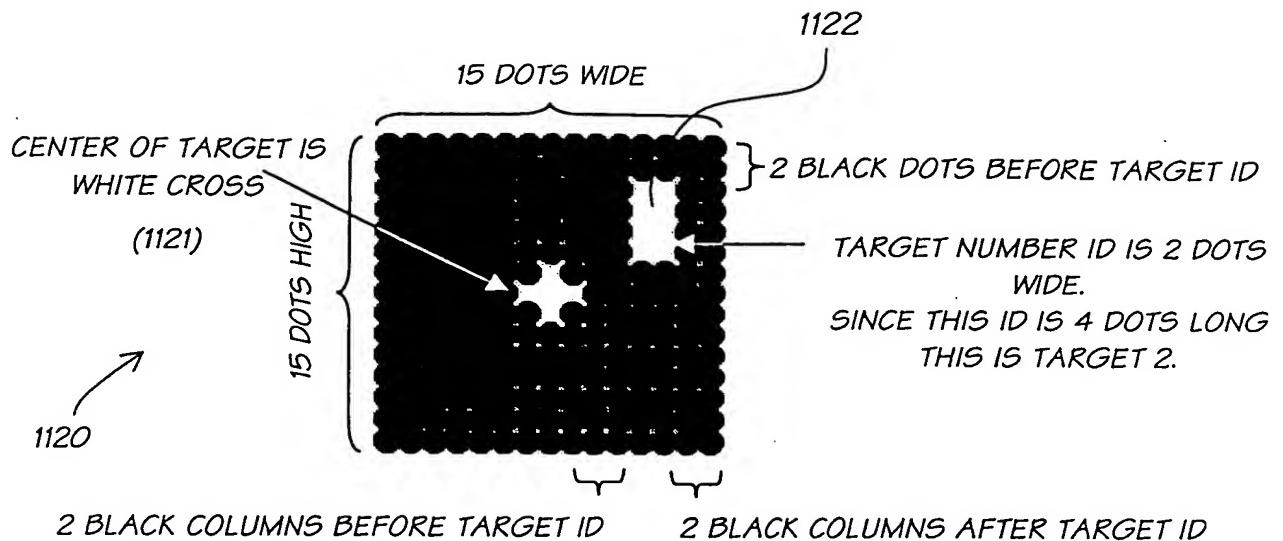


FIG. 53

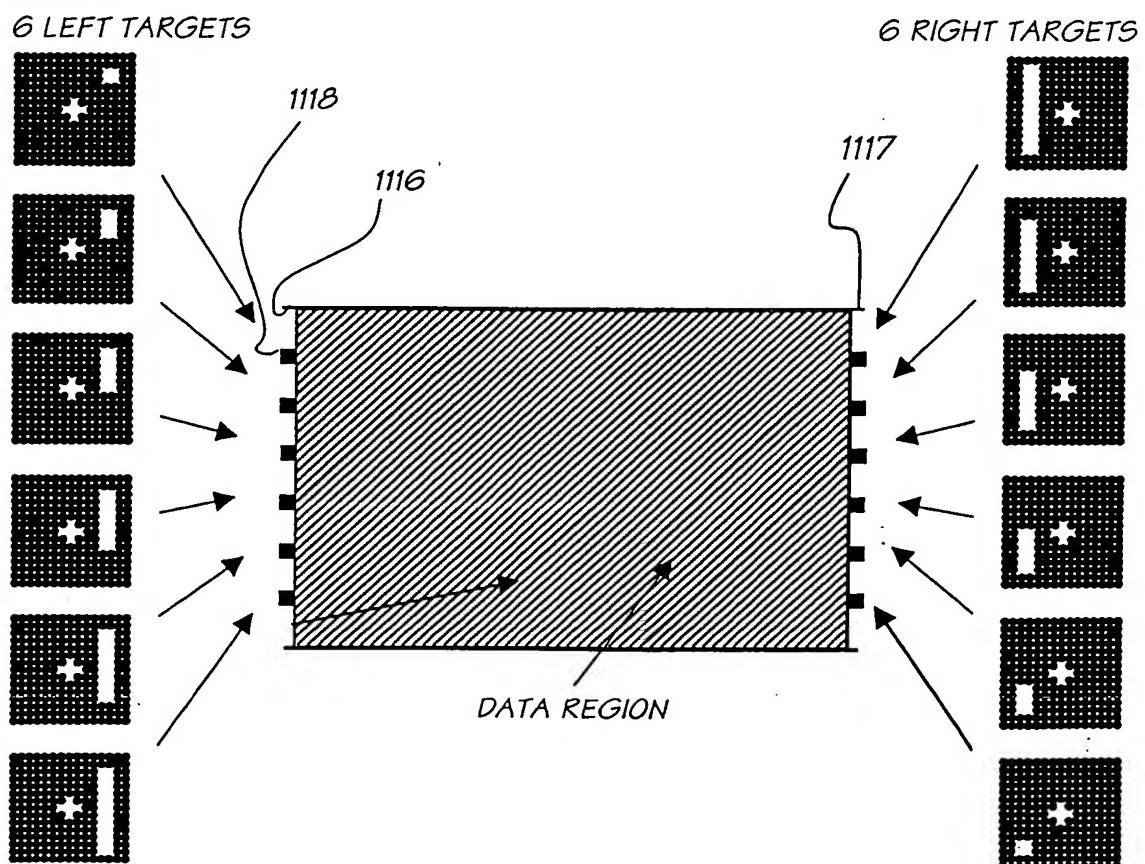


FIG. 54

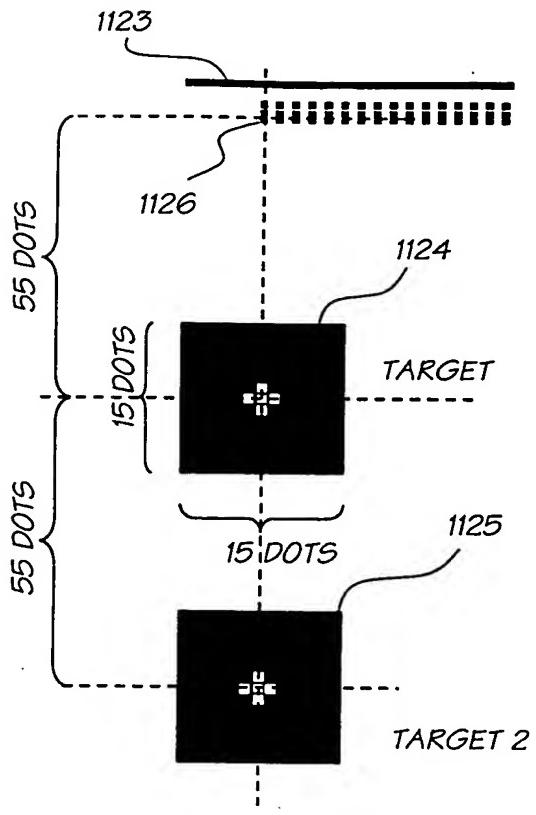


FIG. 55

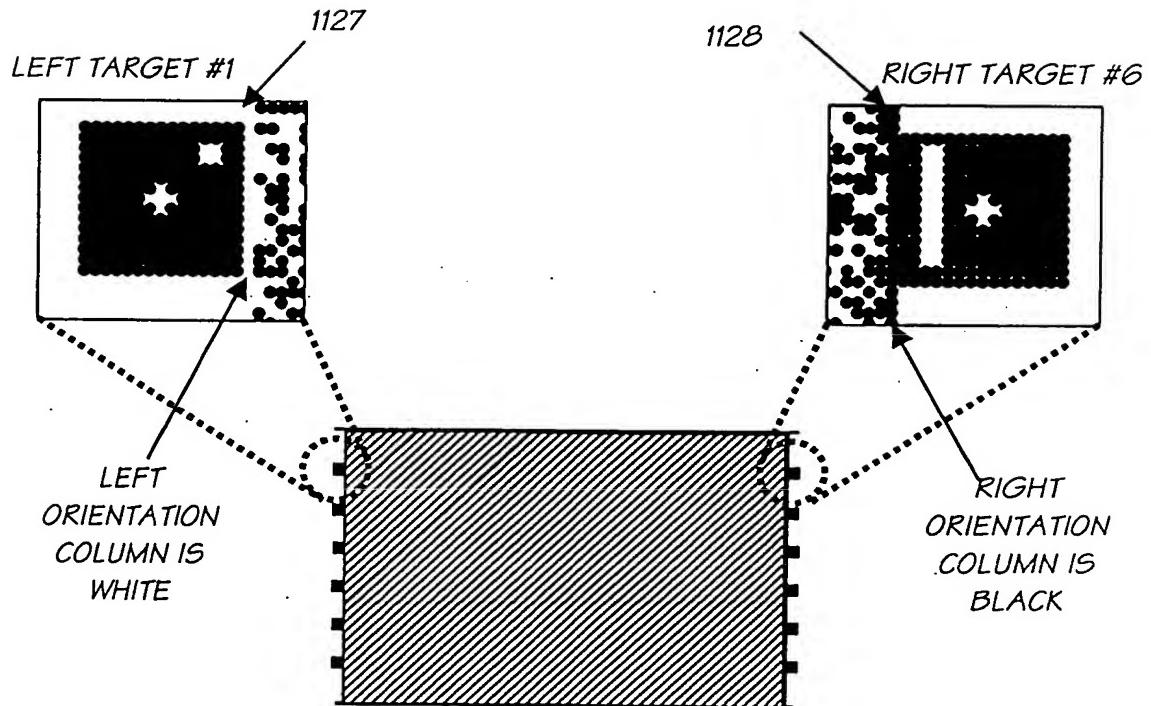


FIG. 56

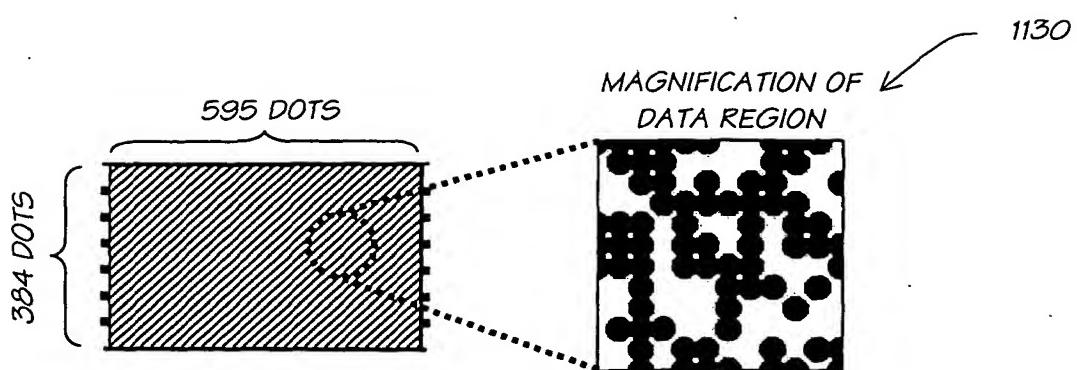


FIG. 57

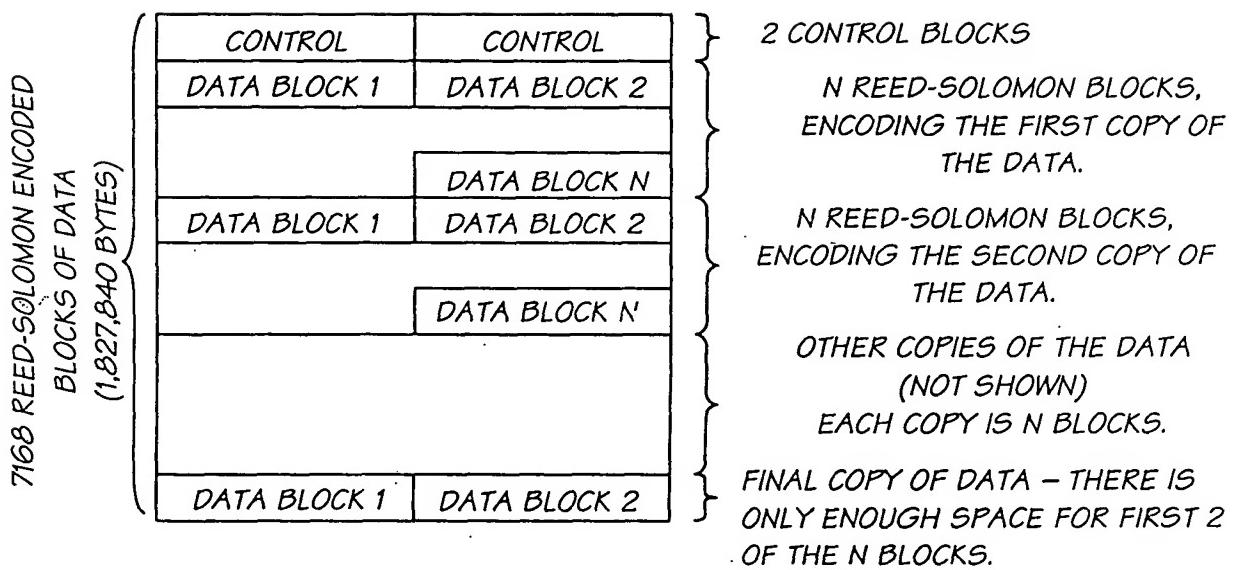


FIG. 58

00:	4F	00	3D									
0C:	4F	00	3D									
18:	4F	00	3D									
24:	4F	00	3D									
30:	4F	00	3D									
3C:	4F	00	3D									
48:	4F	00	3D									
54:	4F	00	3D									
60:	00	00	00	00	00	00	00	00	00	00	00	00
6C:	00	00	00	00	00	00	00	00	00	00	00	00
78:	00	00	00	00	00	00	00	00	00	00	00	00

32 COPIES OF THE
3 BYTE CONTROL
INFORMATION

RESERVED
BYTES ARE 0

FIG. 59

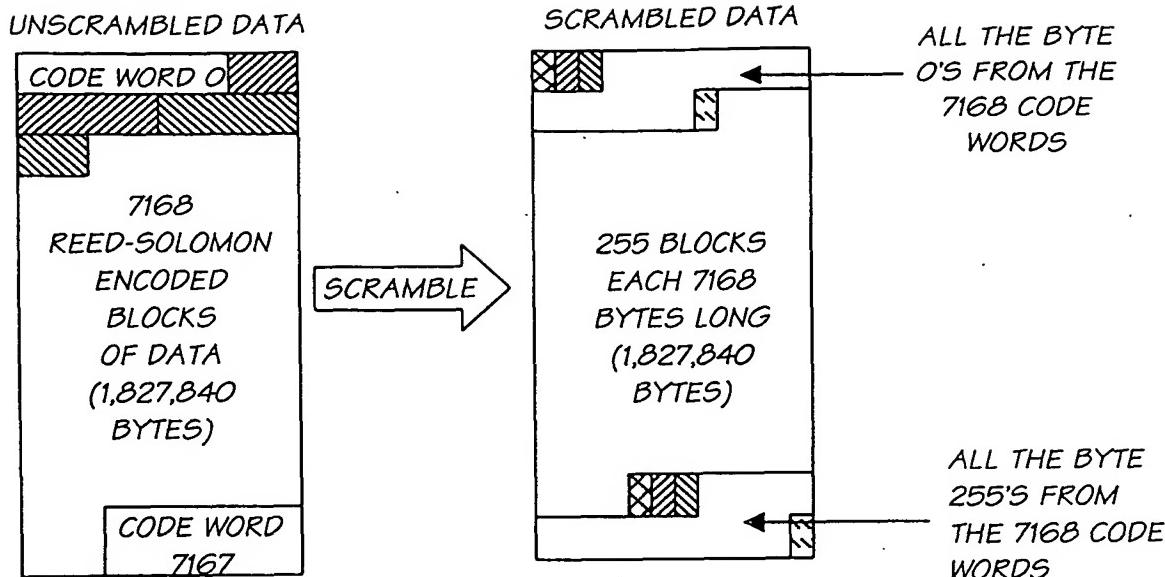


FIG. 60

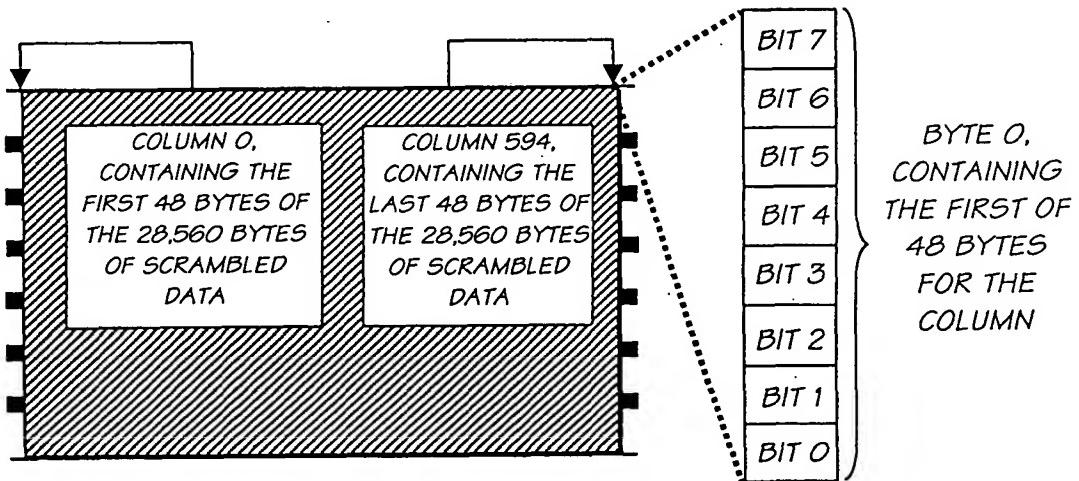


FIG. 61

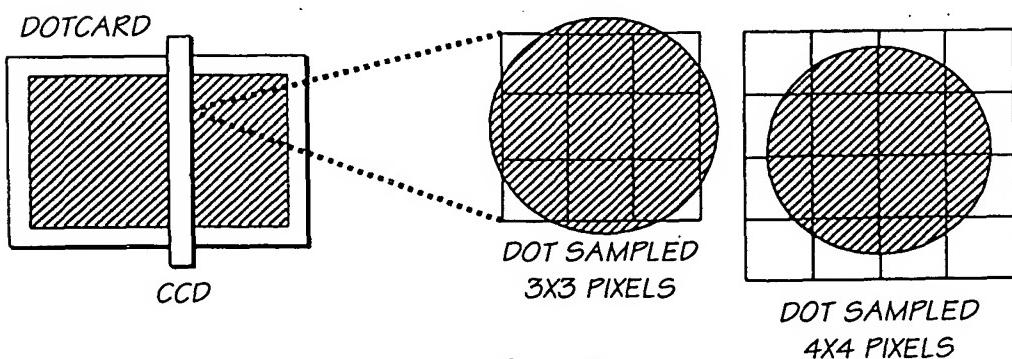
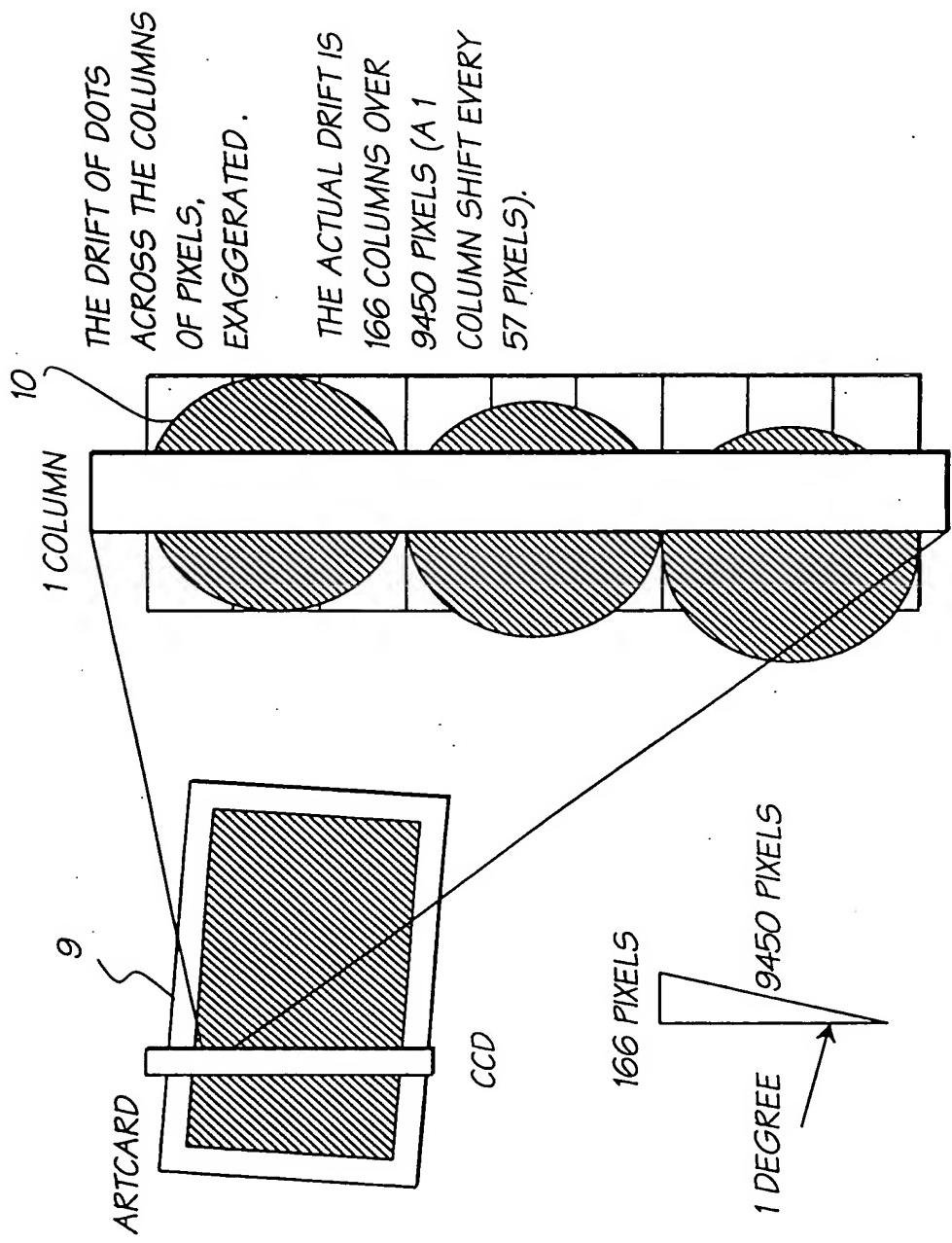


FIG. 62

FIG. 63



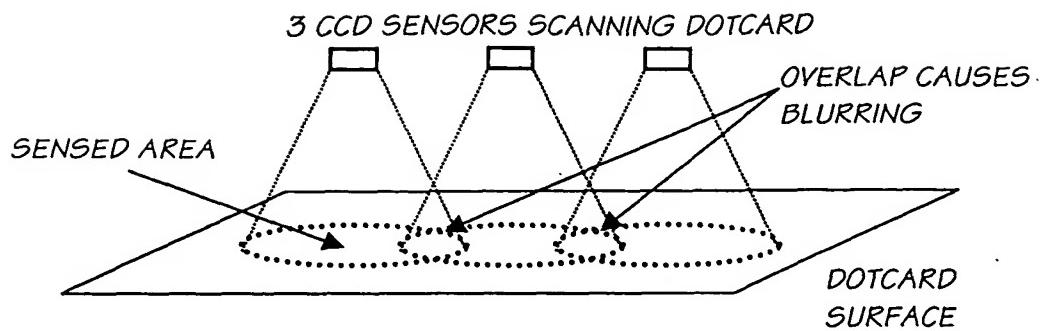
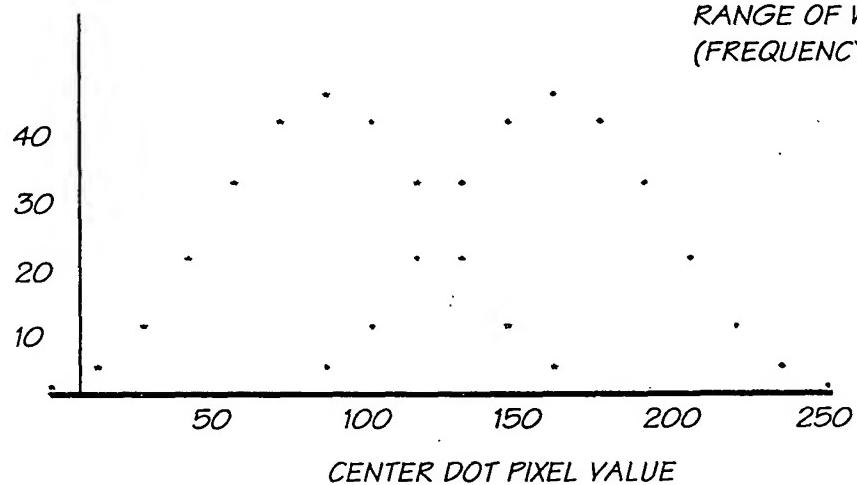


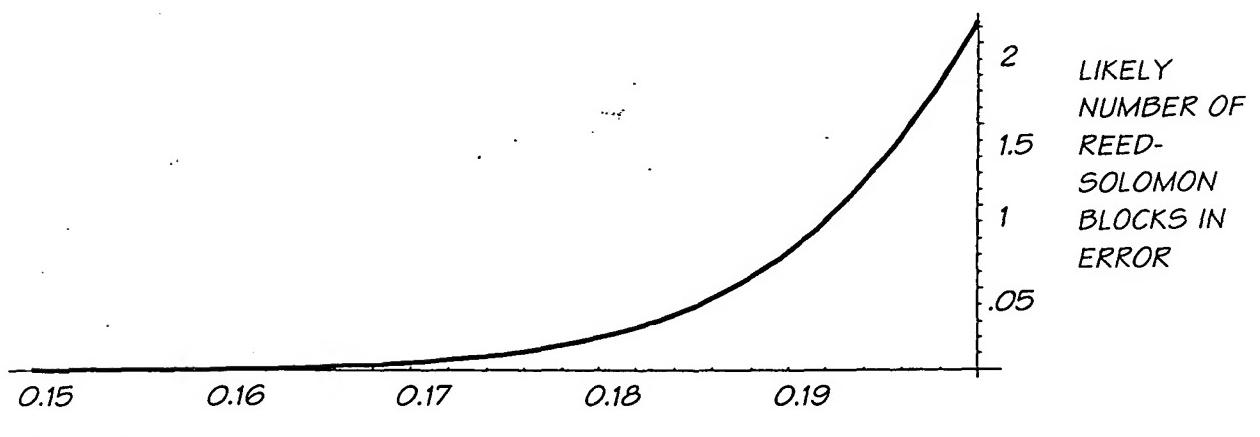
FIG. 64

RANGE OF BLACK DOTS
(FREQUENCY DISTRIBUTION)



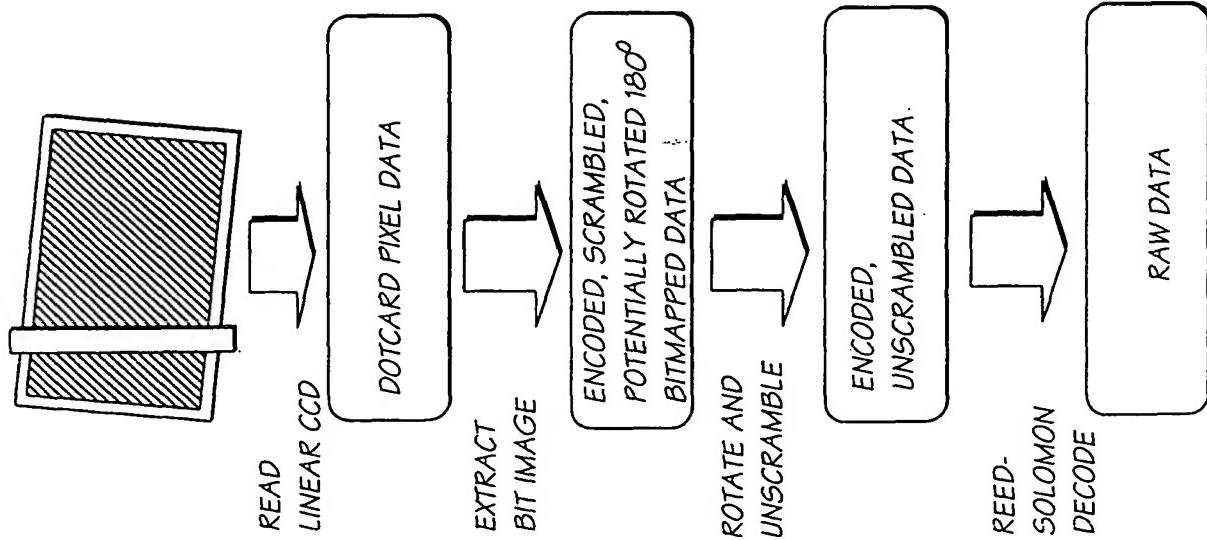
RANGE OF WHITE DOTS
(FREQUENCY DISTRIBUTION)

FIG. 65



PROBABILITY OF A SYMBOL BEING IN ERROR DURING A READ

FIG. 66



APPROXIMATE DATA SIZES FOR 1600 DPI DOTCARD

86MM + 1MM IN HORIZONTAL DIMENSION FOR P ROTATION = 87MM

87MM = 16,252 SCANLINES

16,440 SCANLINES @ 11,000 PIXELS PER SCANLINE = 180,840,000 PIXELS

180,840,000 PIXELS @ 1 BYTE PER PIXEL = 180,840,000 BYTES = 172.5 MB

64 DATA BLOCKS, EACH CONTAINING 597 COLUMNS (595 DATA REGION COLUMNS AND 2 ORIENTATION COLUMNS), @ 48 BYTES PER COLUMN = 28,656 BYTES PER DATA BLOCK FOR A TOTAL OF 1,833,984 BYTES.

64 DATA BLOCKS, EACH CONTAINING 112 ENCODED REED-SOLOMON BLOCKS, @ 255 BYTES PER REED-SOLOMON BLOCK FOR A TOTAL OF 1,827,840 BYTES.

DECODED DATA, WITH A MAXIMUM SIZE OF 910,082 BYTES.
(64 X 112 X 127 - (2 CONTROL BLOCKS @ 127 BYTES))

FIG. 67

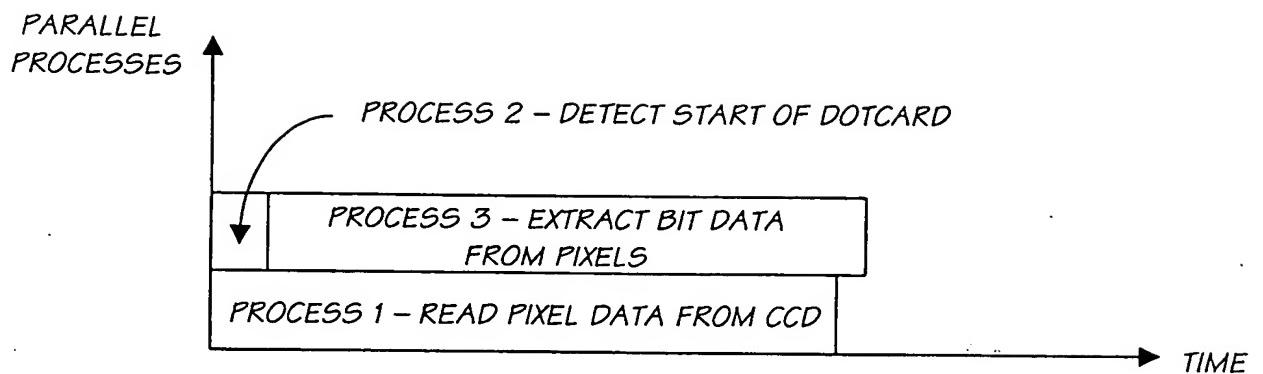


FIG. 68

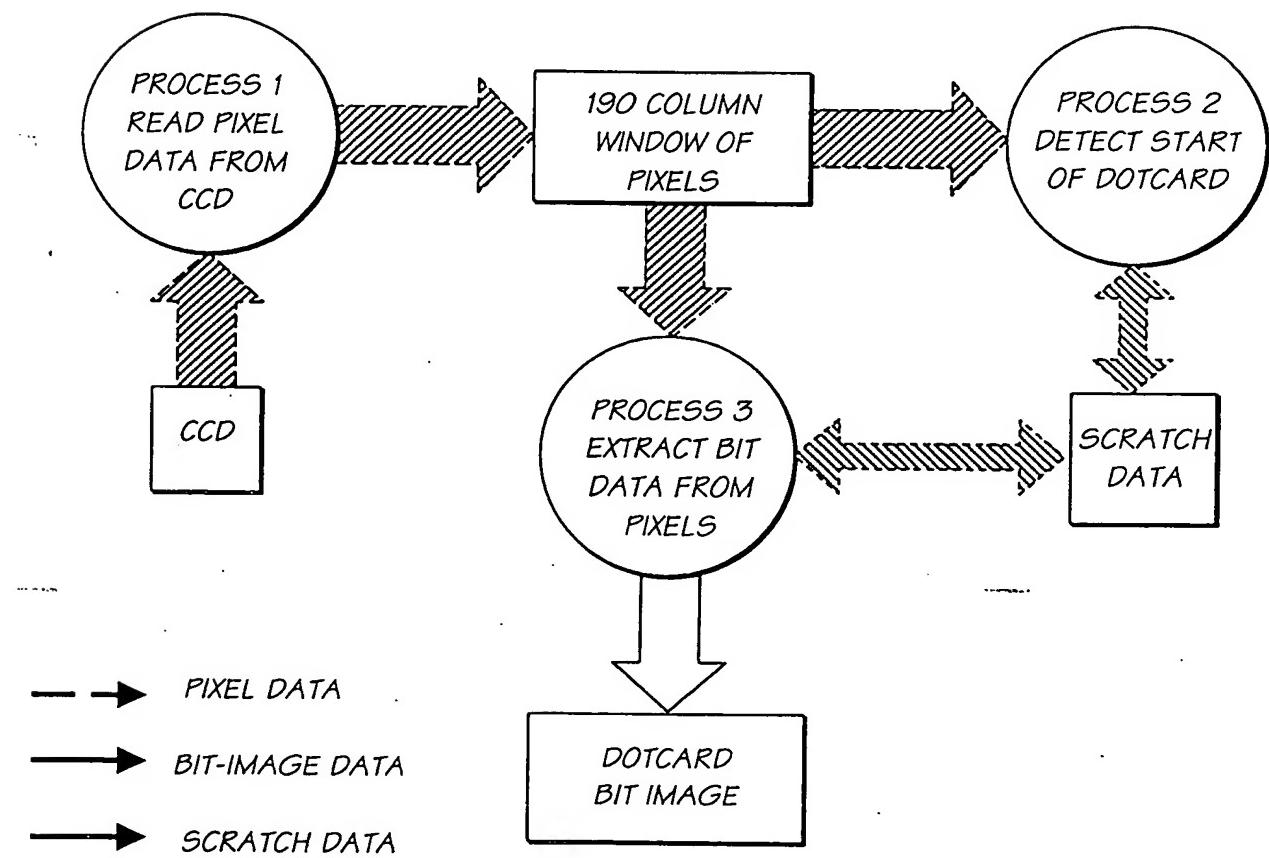


FIG. 69

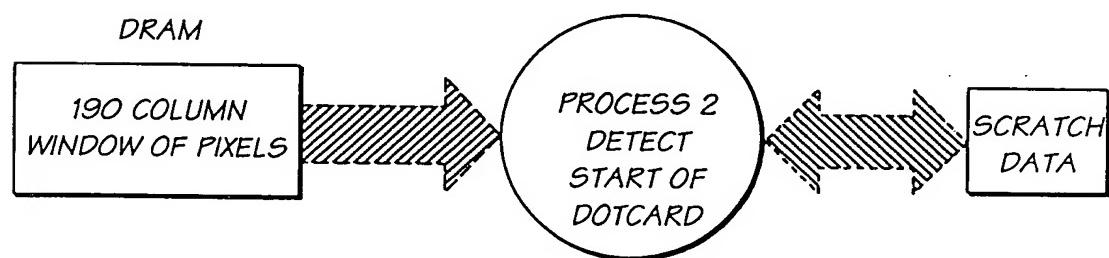
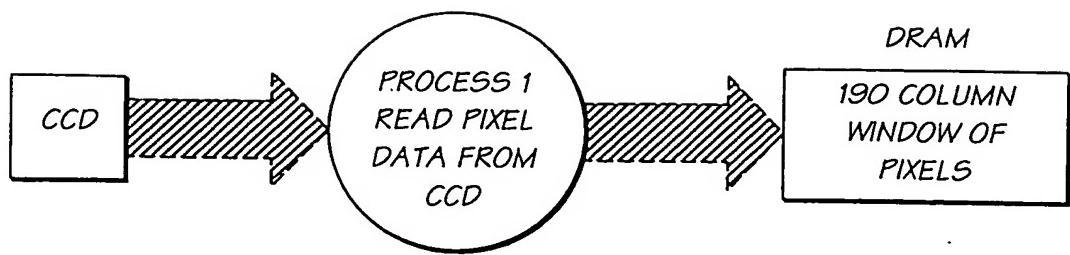


FIG. 71

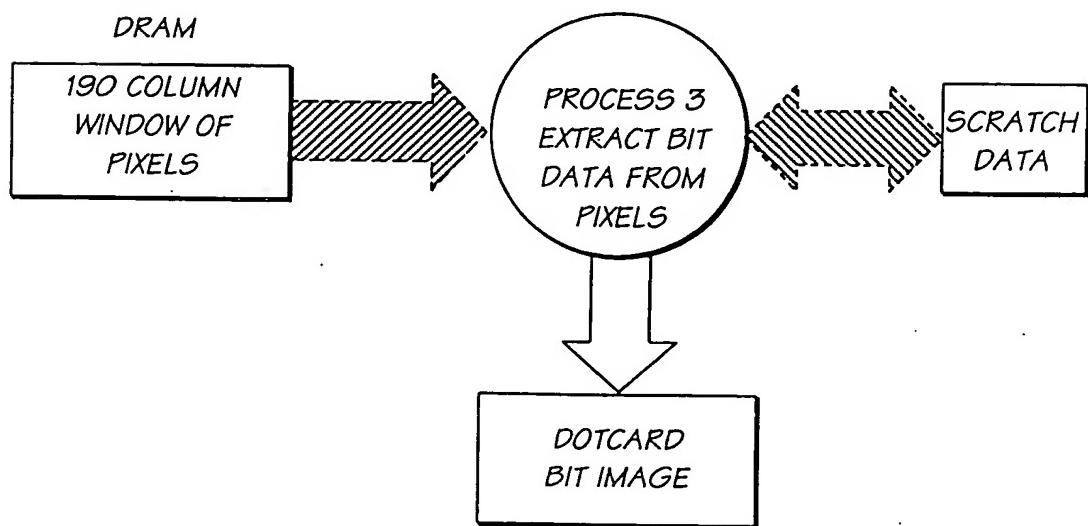


FIG. 72

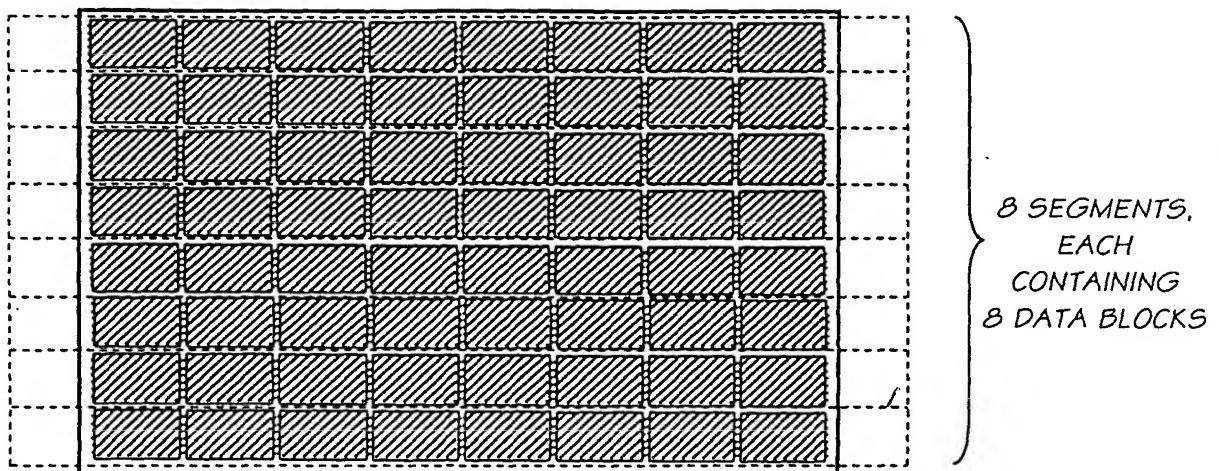


FIG. 73

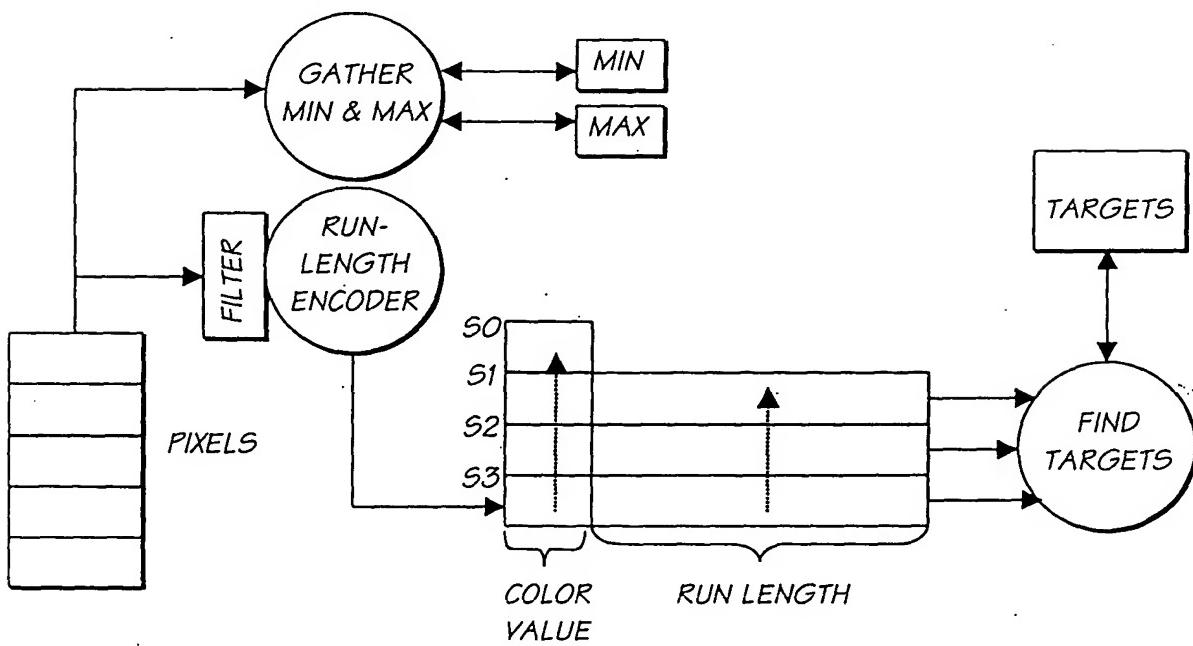


FIG. 74

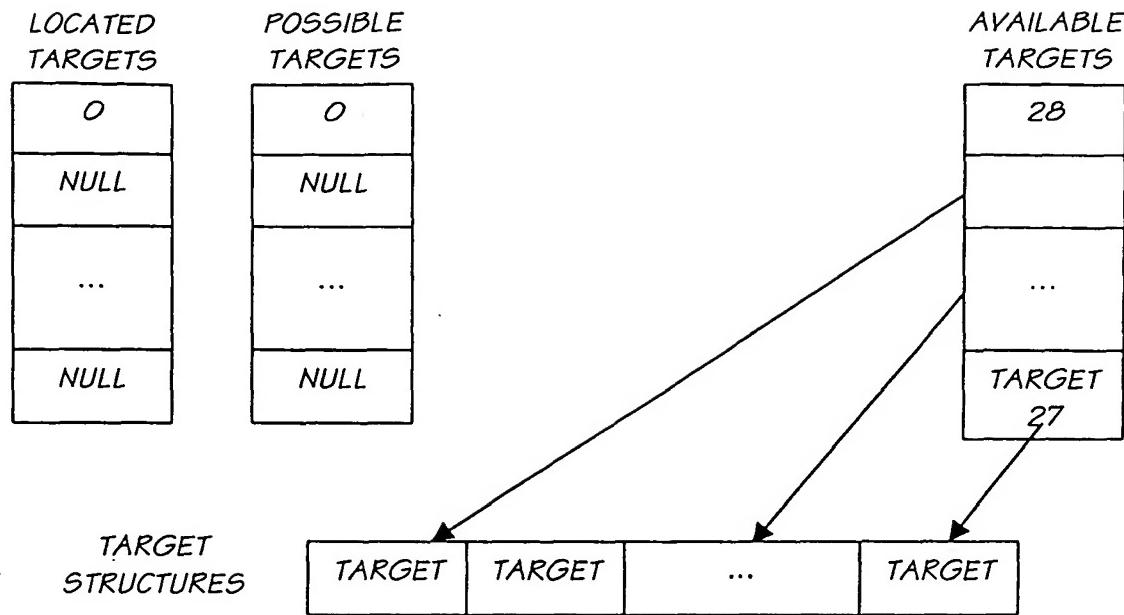


FIG. 75

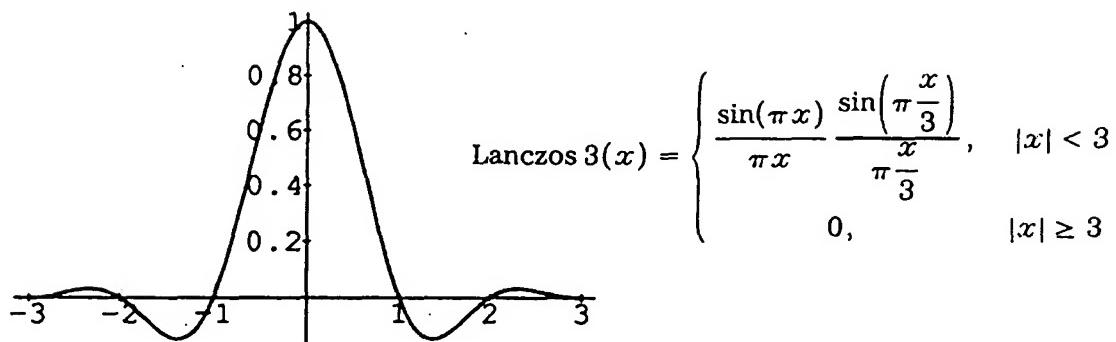


FIG. 76

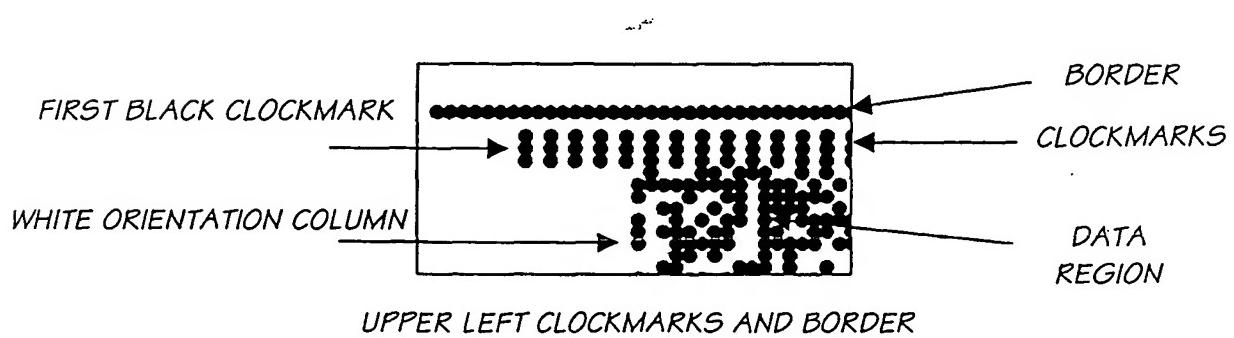


FIG. 77

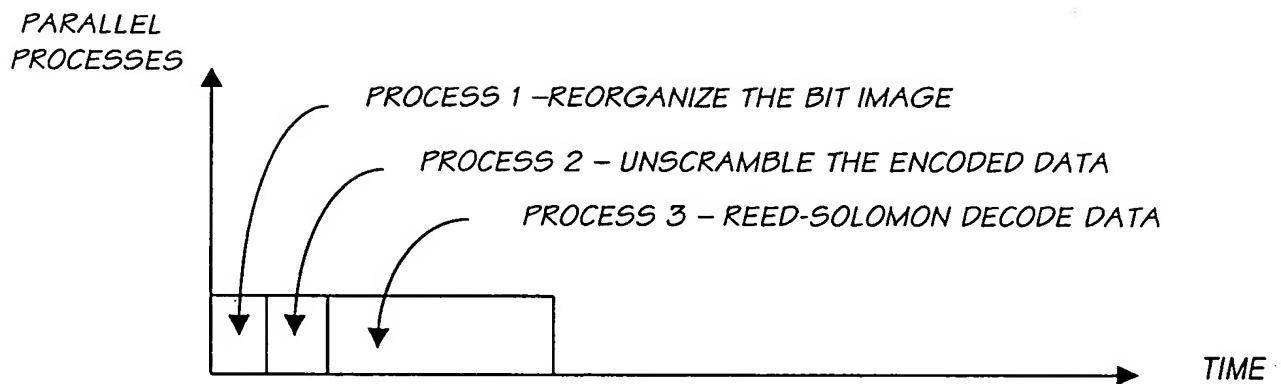


FIG. 78

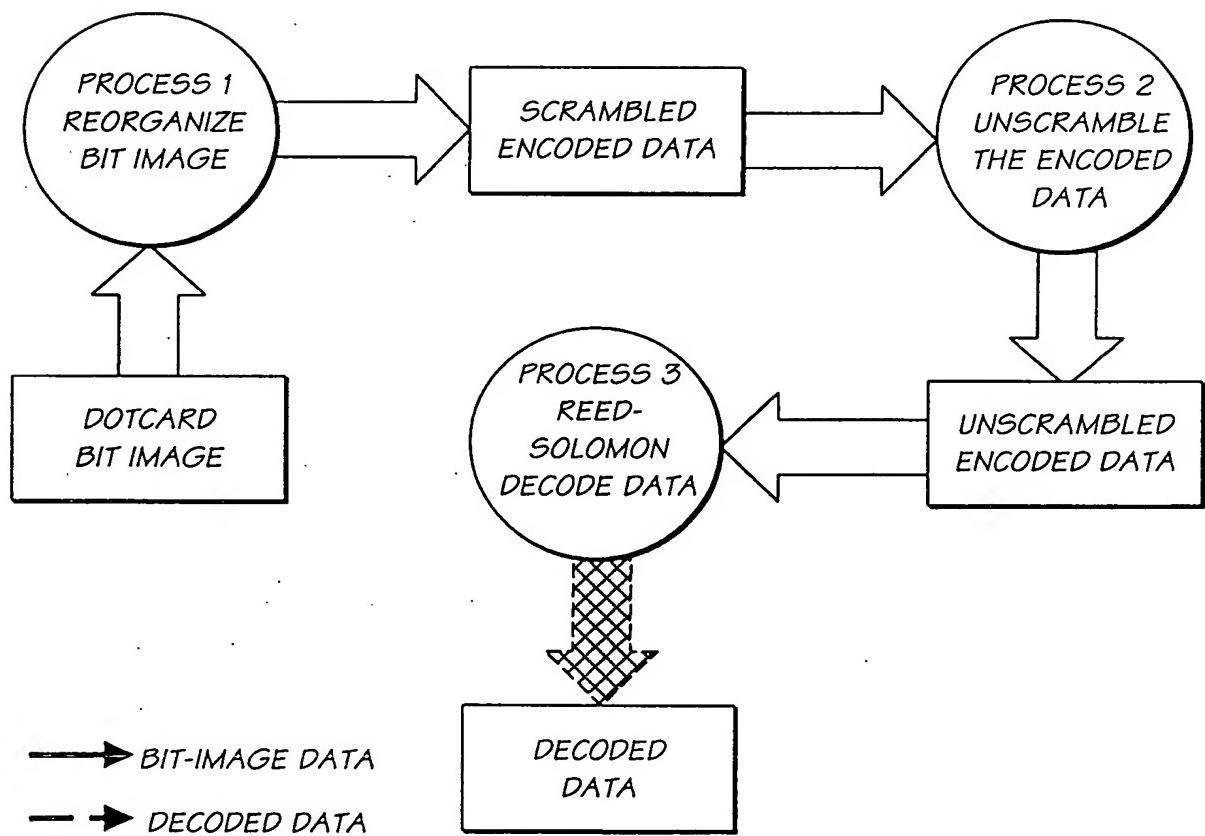


FIG. 79

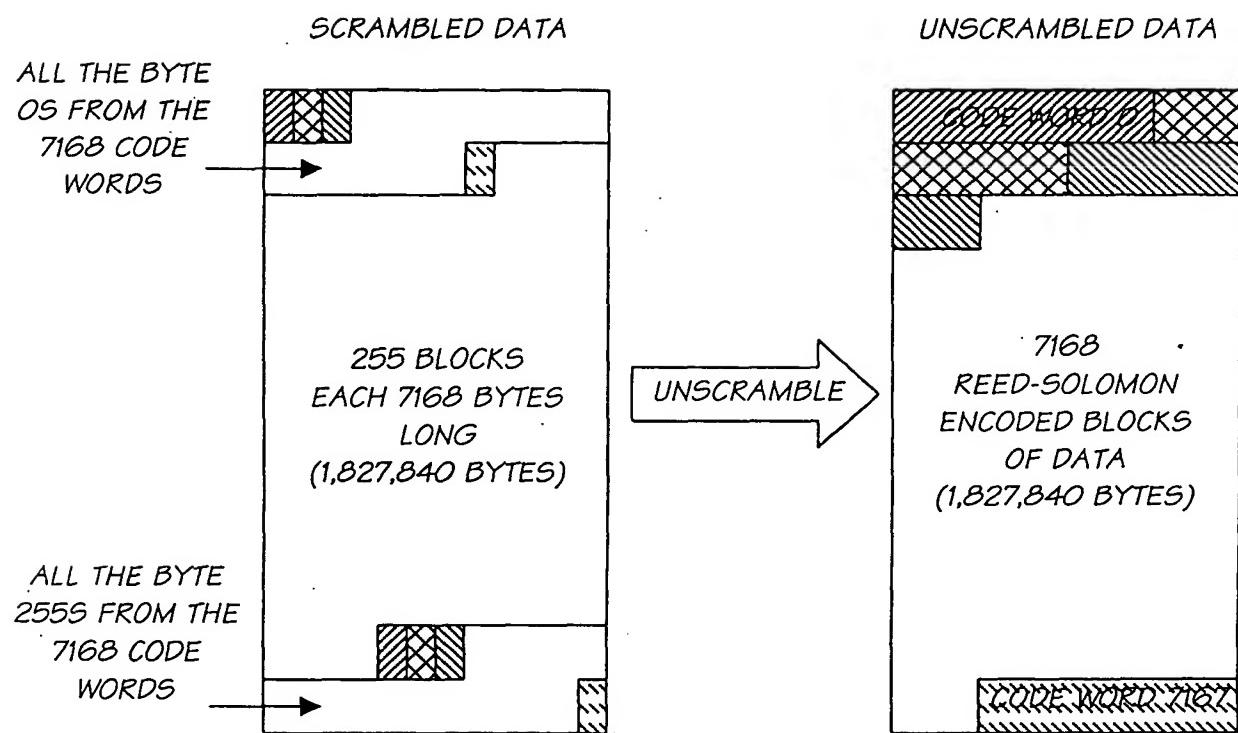


FIG. 80

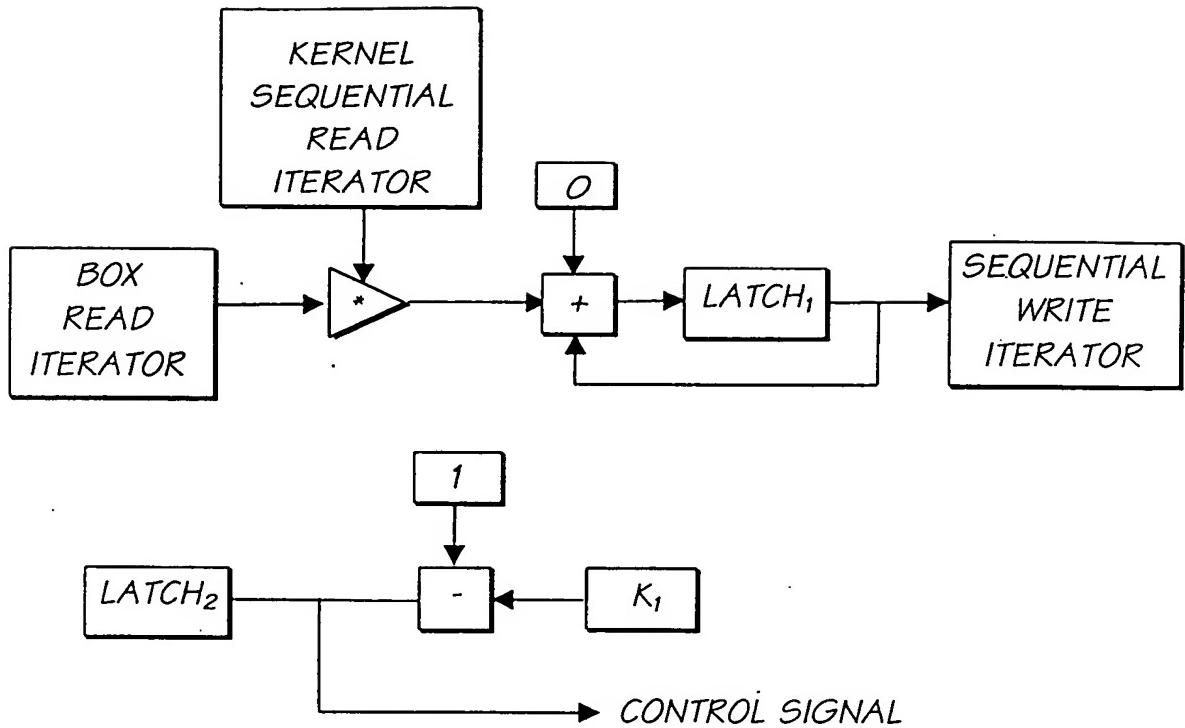


FIG. 81

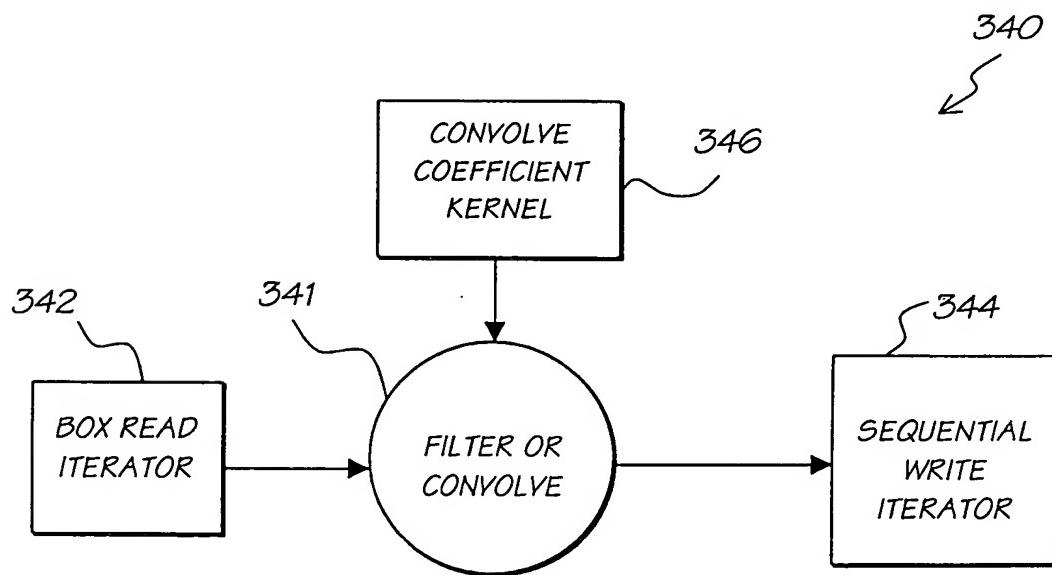


FIG. 82

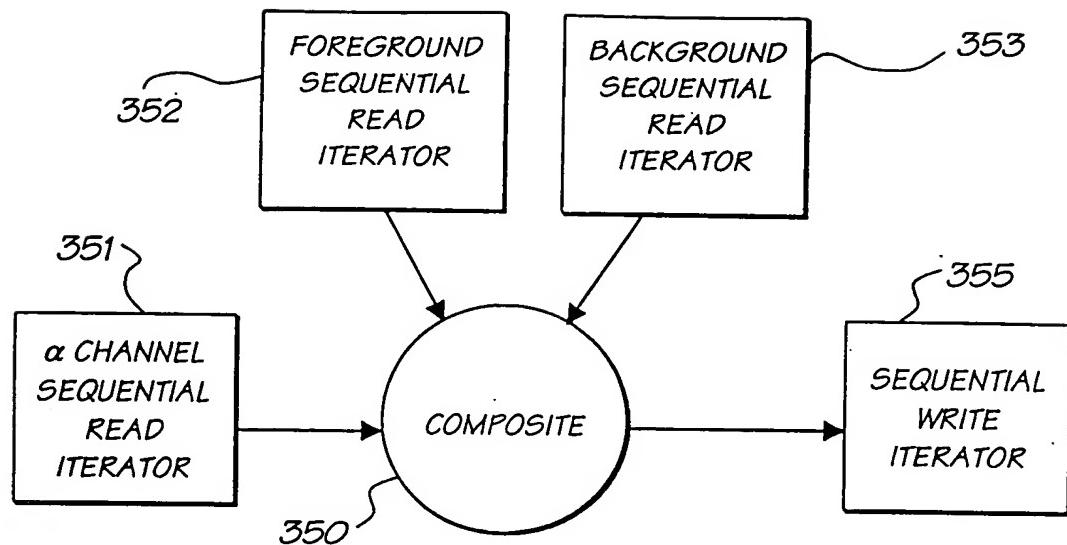


FIG. 83

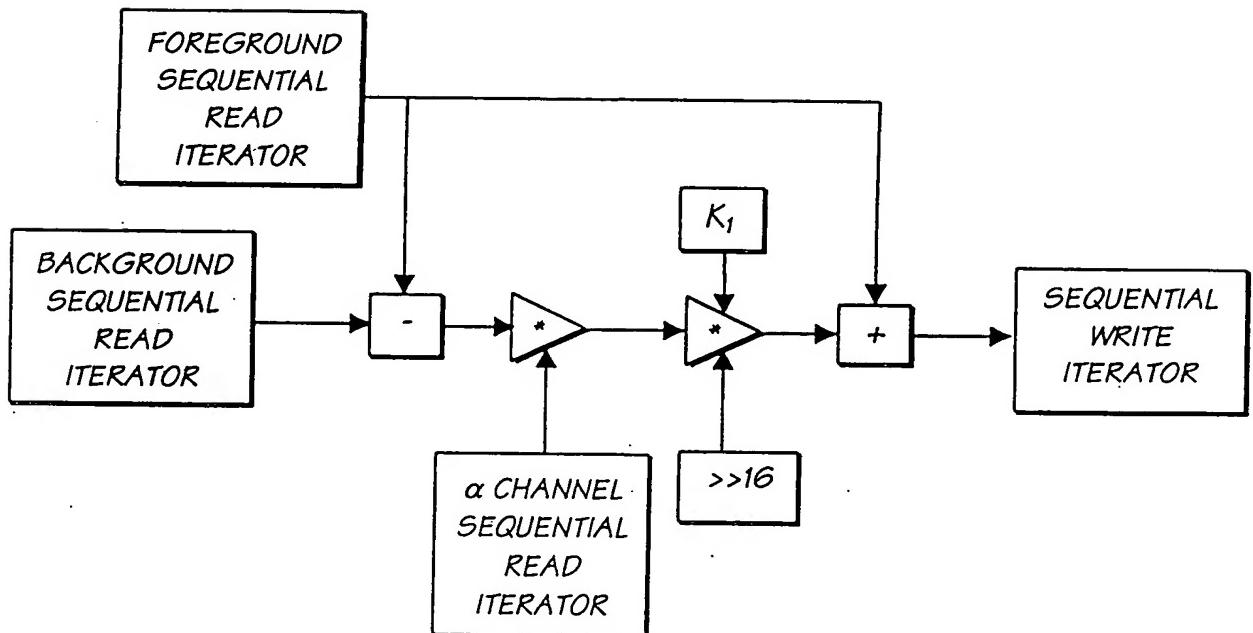


FIG. 84

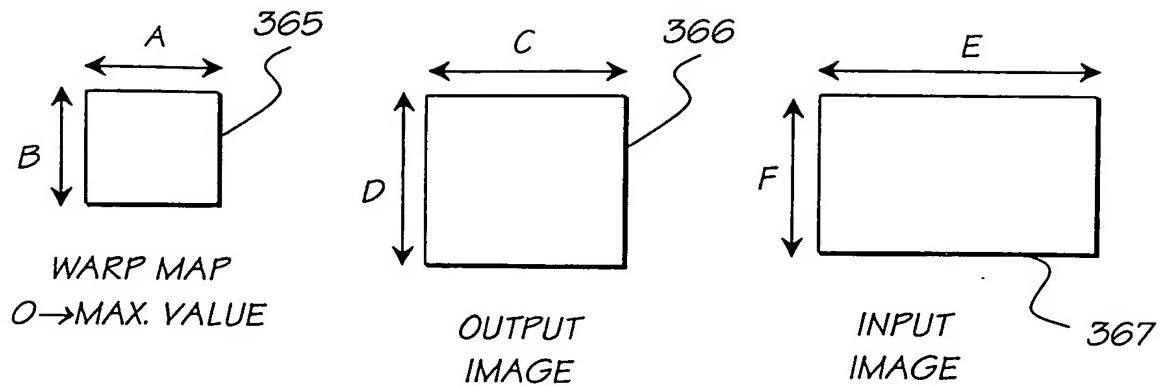


FIG. 85

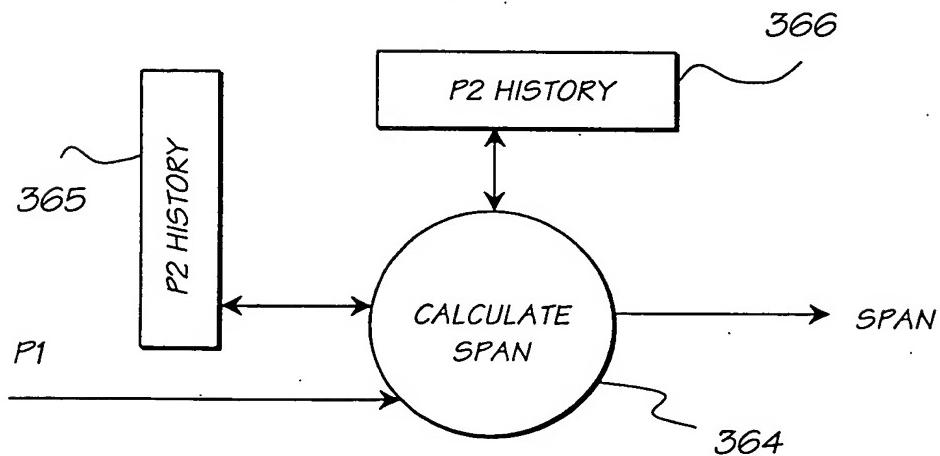


FIG. 86

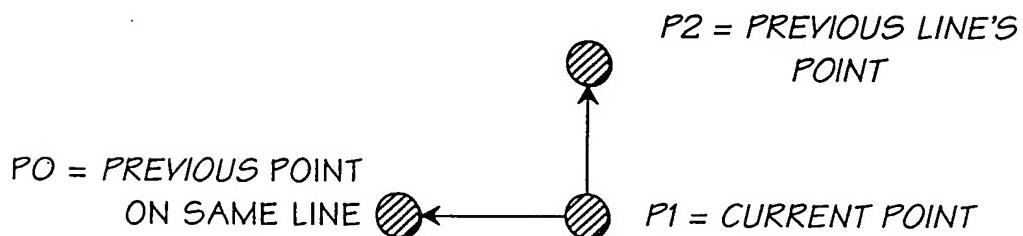


FIG. 88

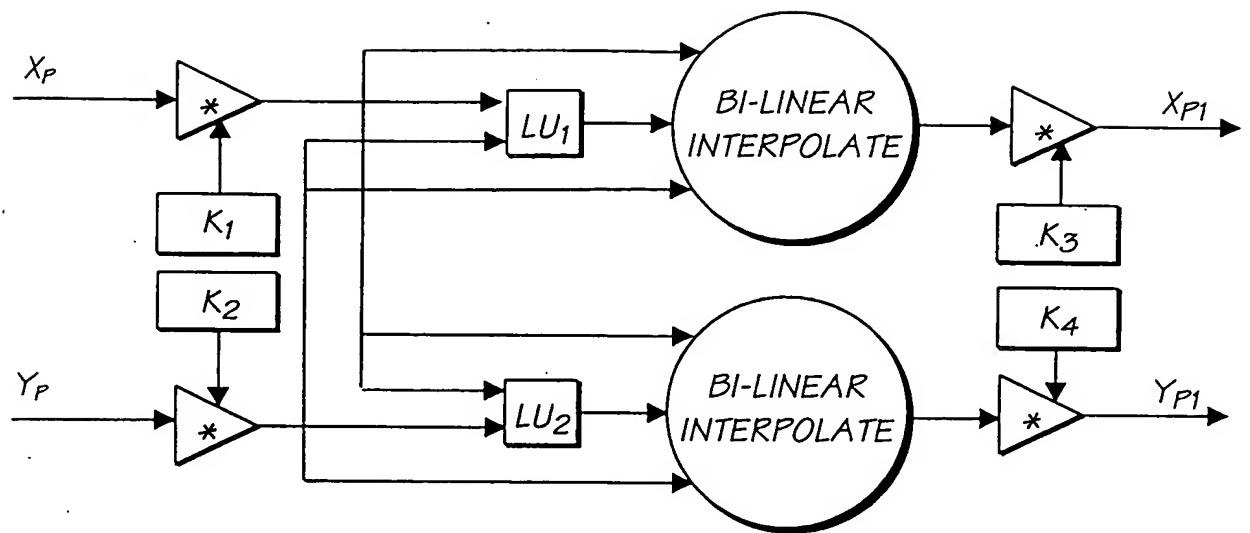


FIG. 87

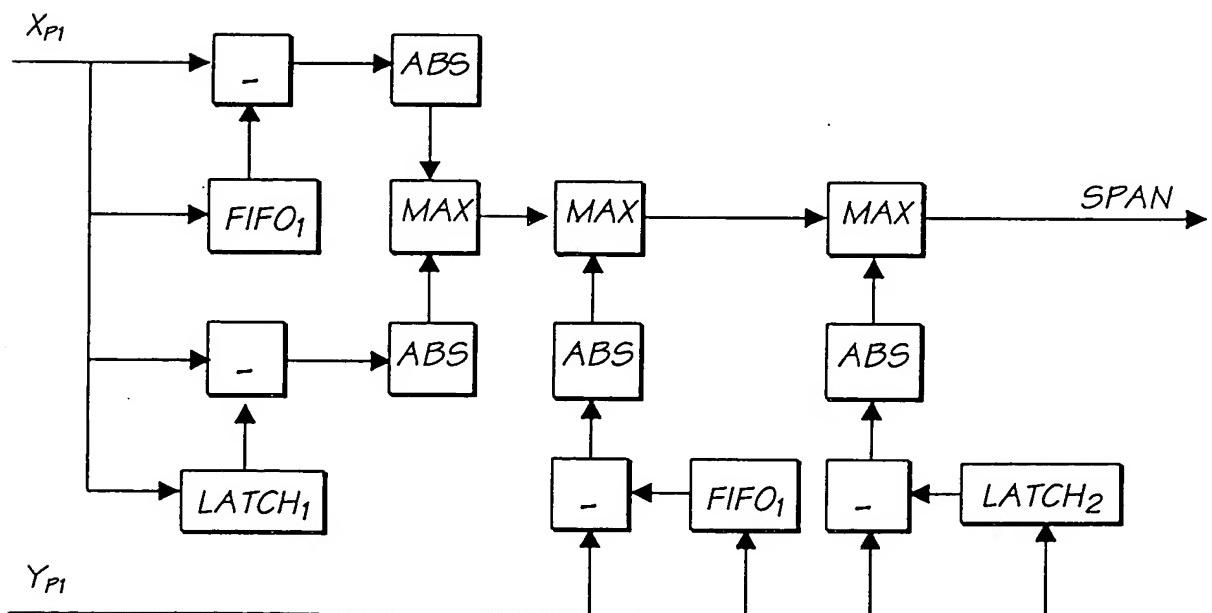


FIG. 89

POINT (x, y) ON LEVEL B
OF PYRAMID

LEVEL B OF PYRAMID
 $(In_{2^S}+1)$

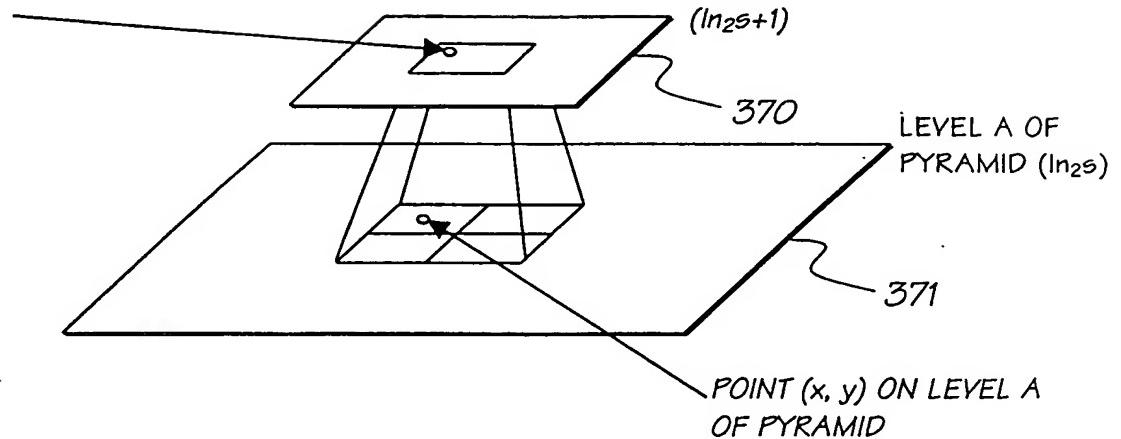


FIG. 90

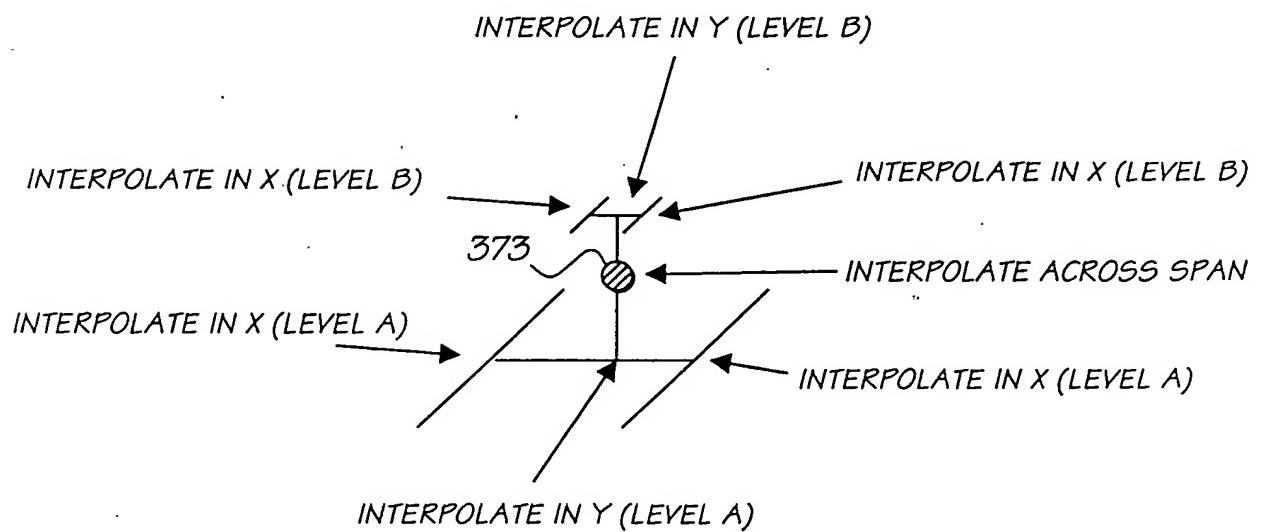


FIG. 91

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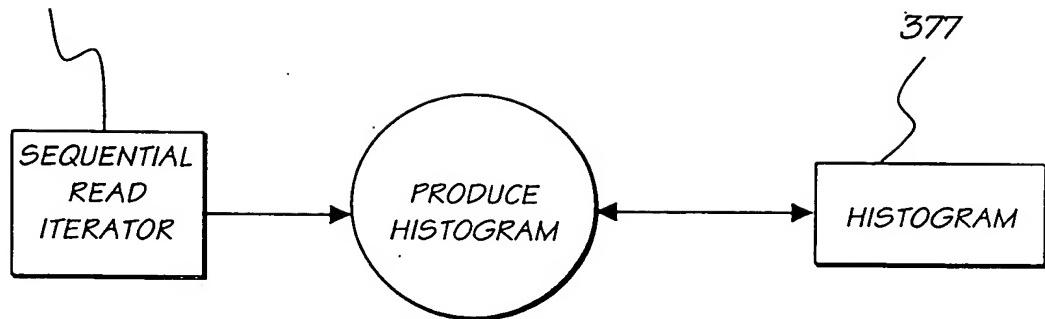


FIG. 92

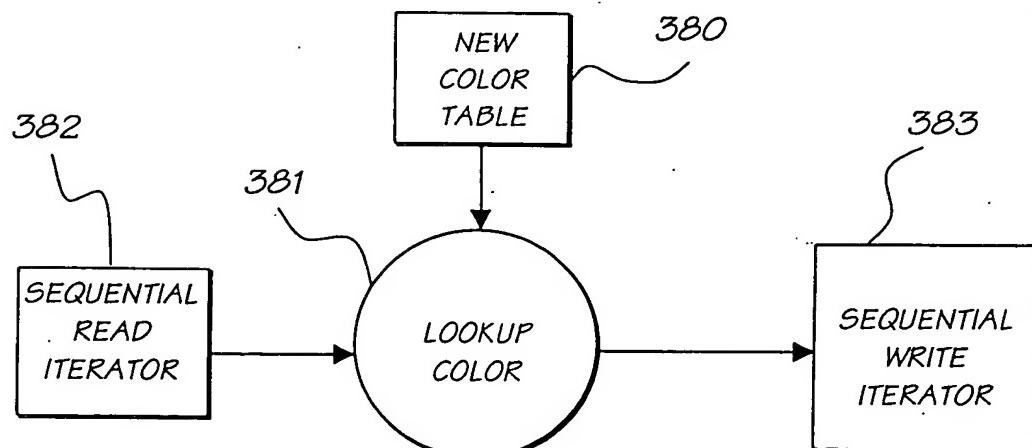


FIG. 93

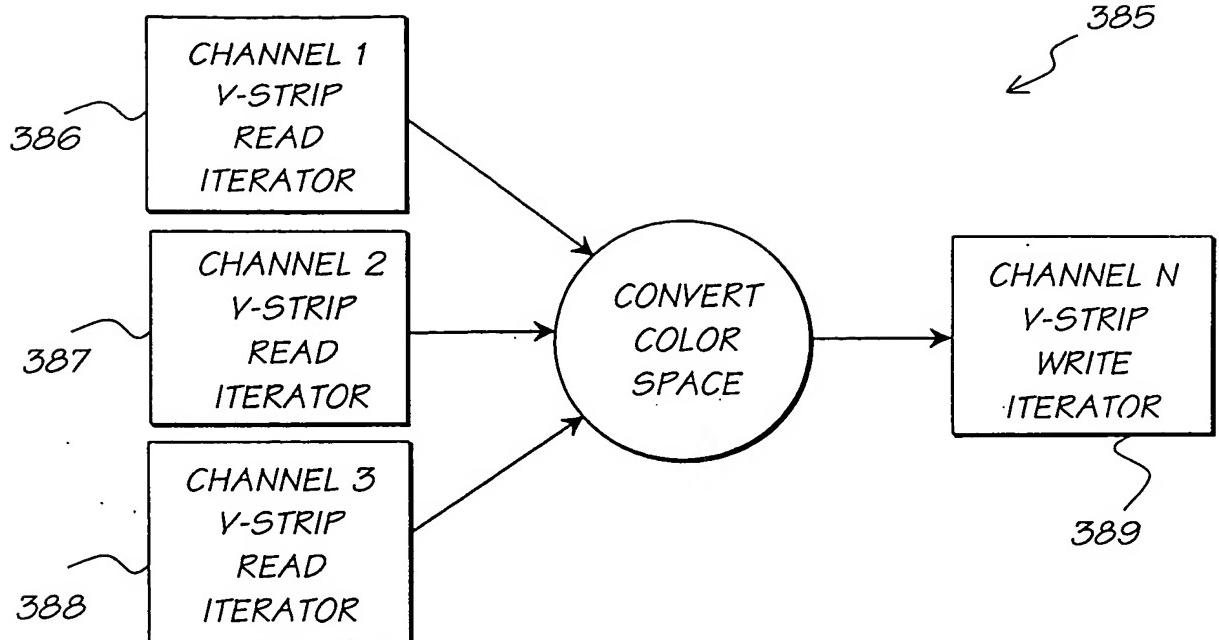


FIG. 94

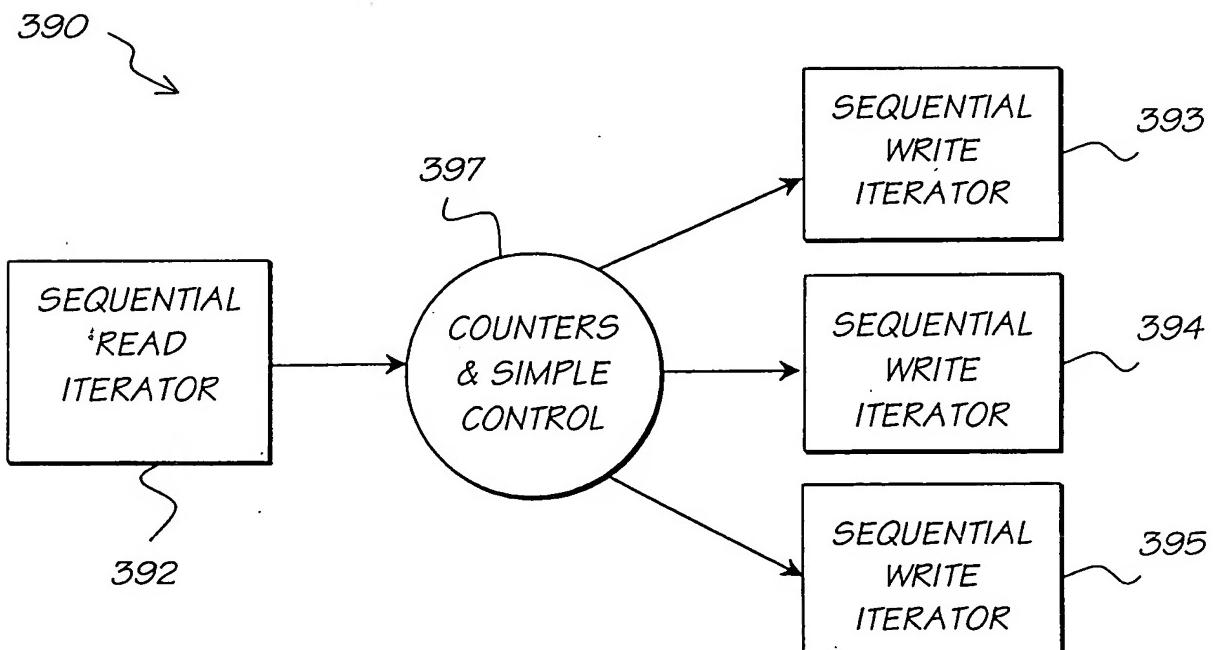


FIG. 101

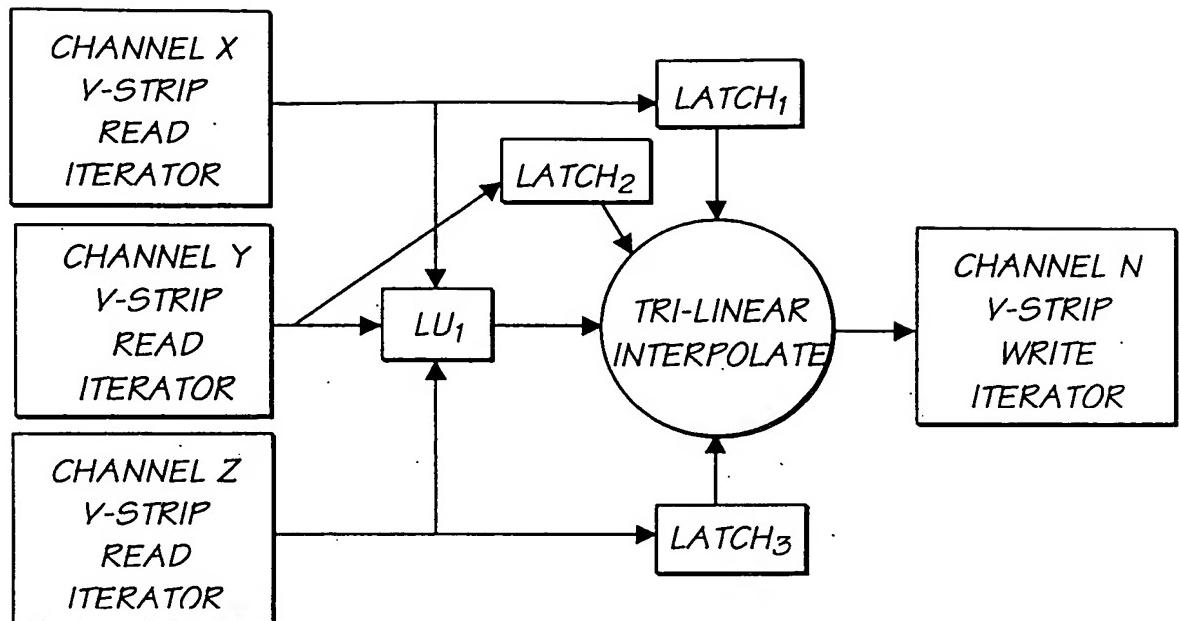


FIG. 95

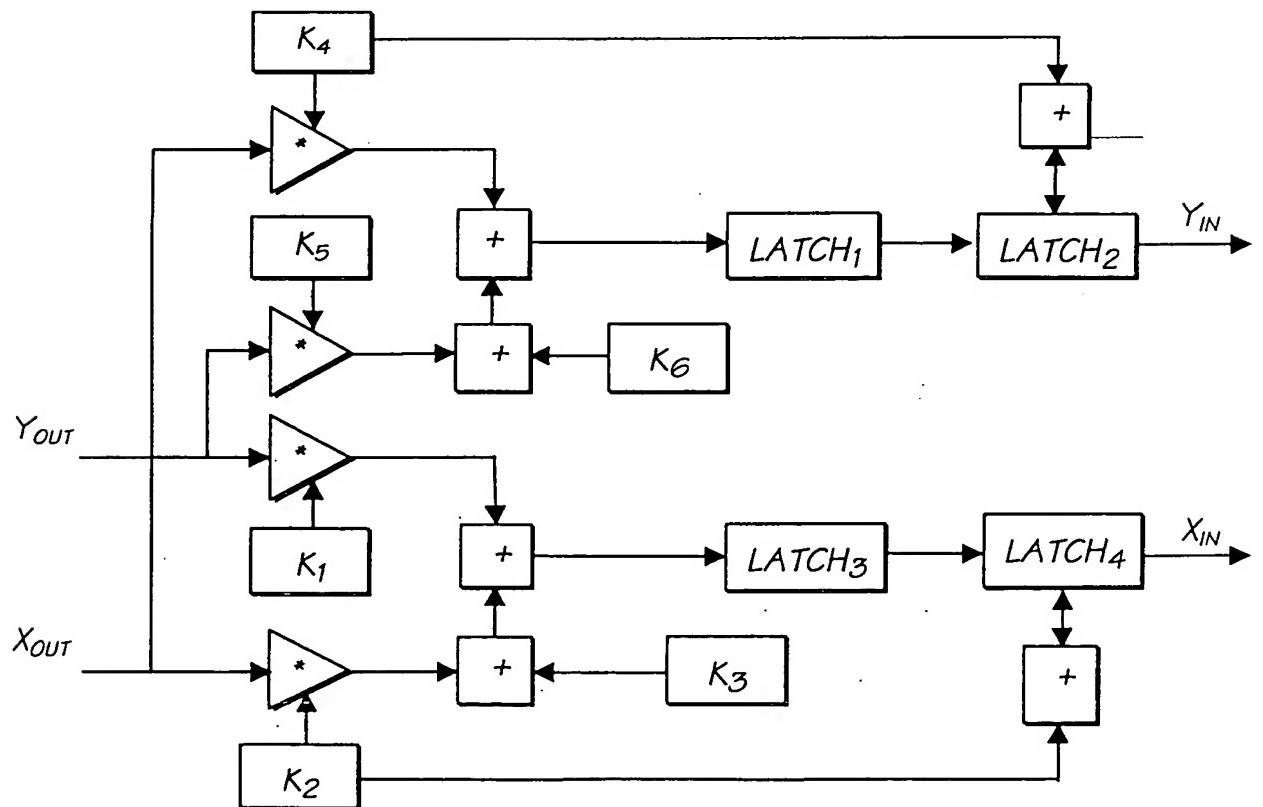


FIG. 96

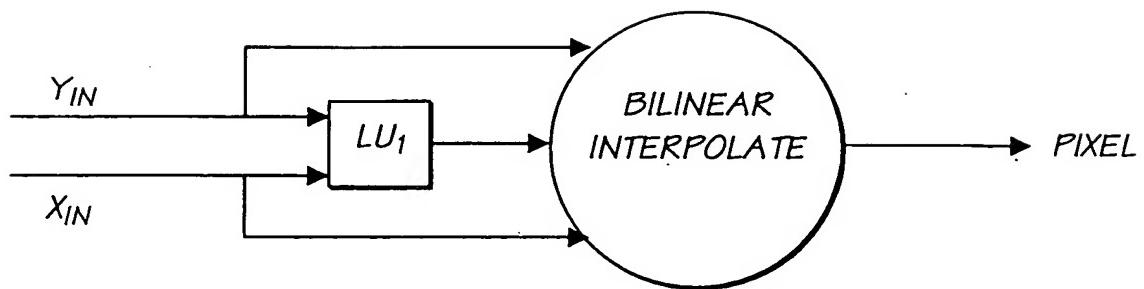


FIG. 97

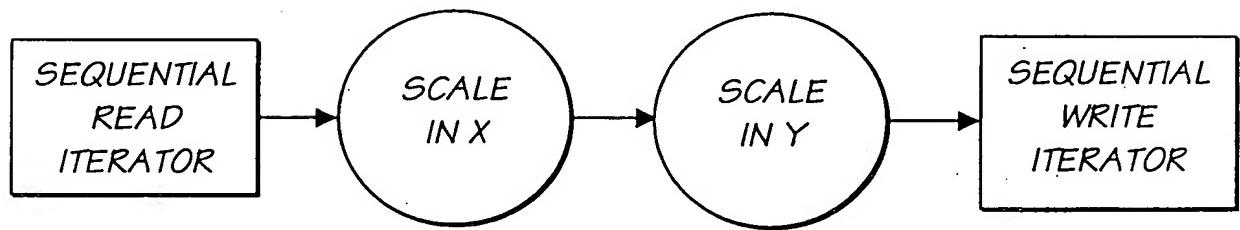


FIG. 98

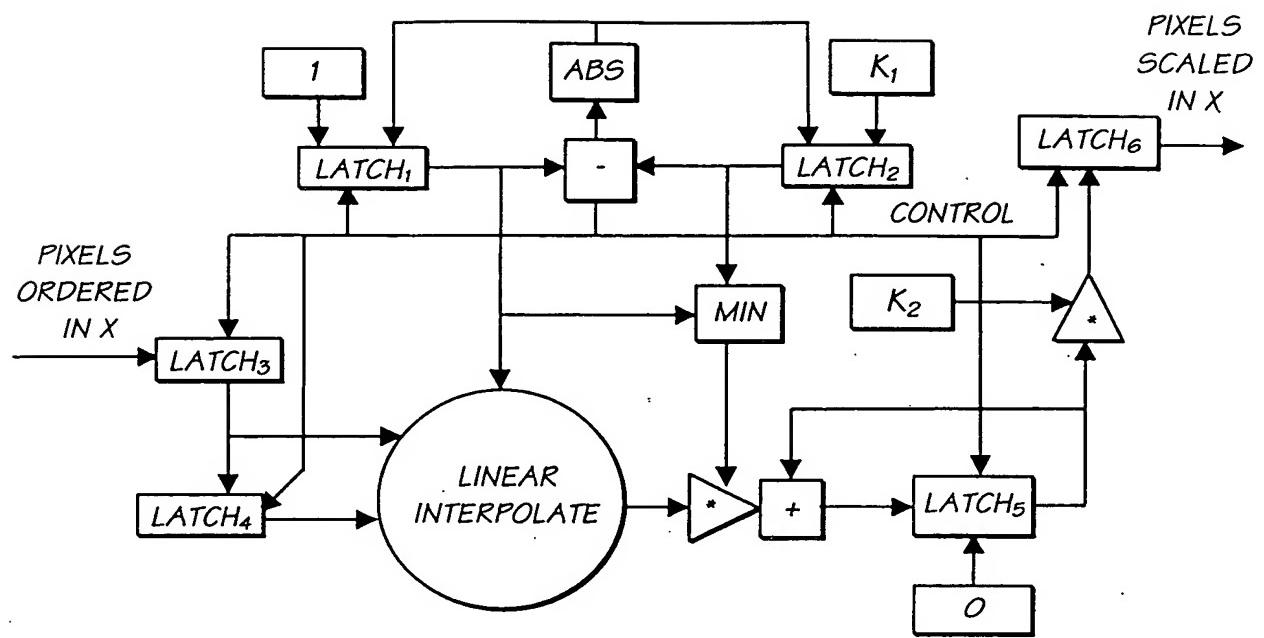


FIG. 99

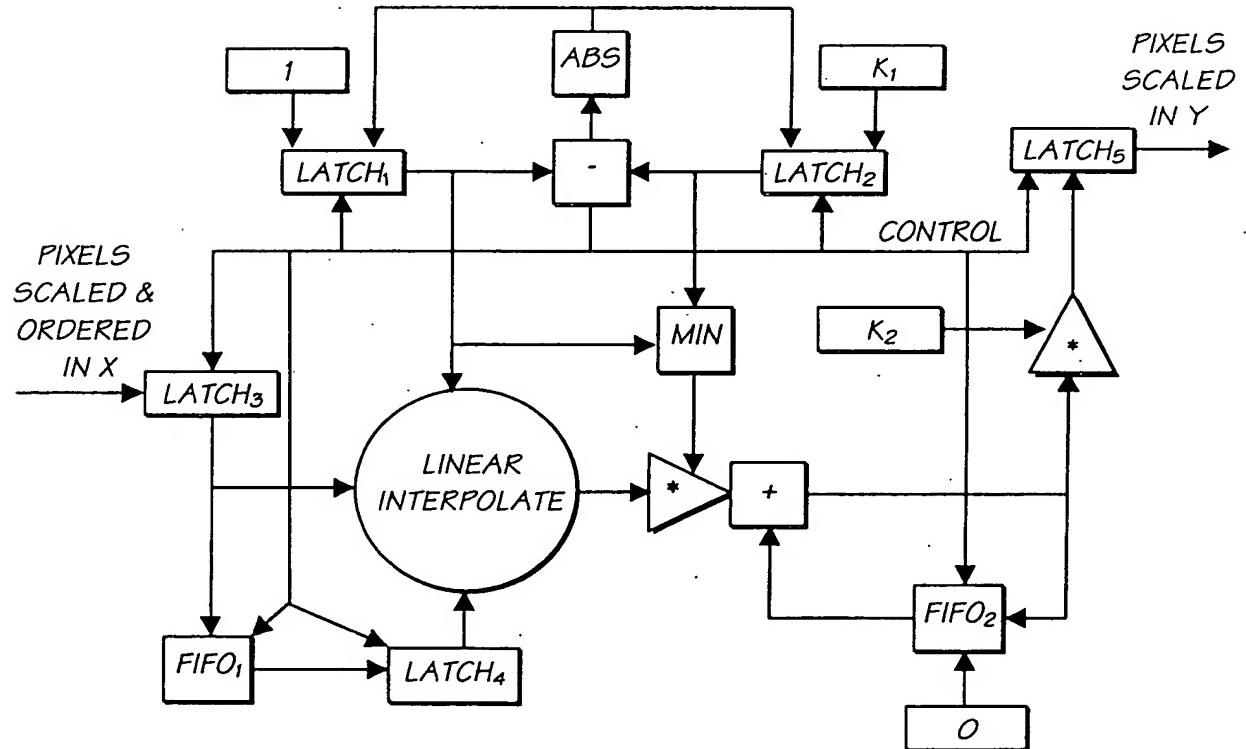
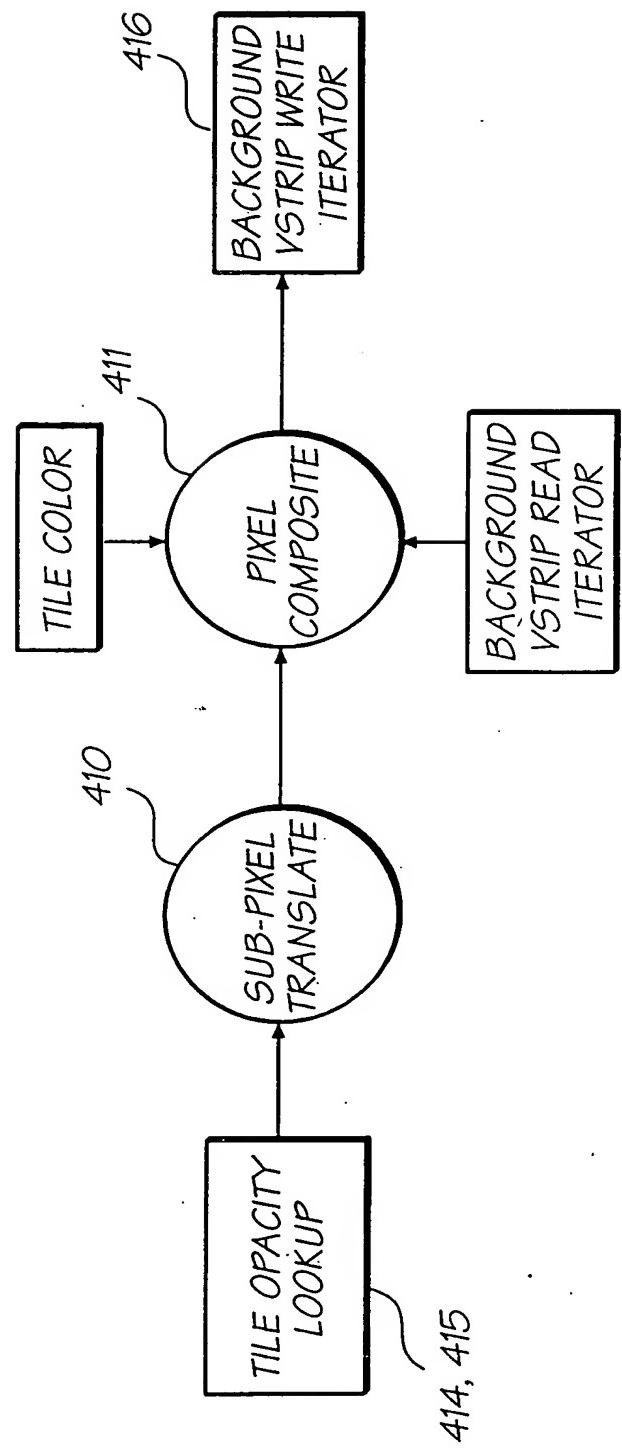
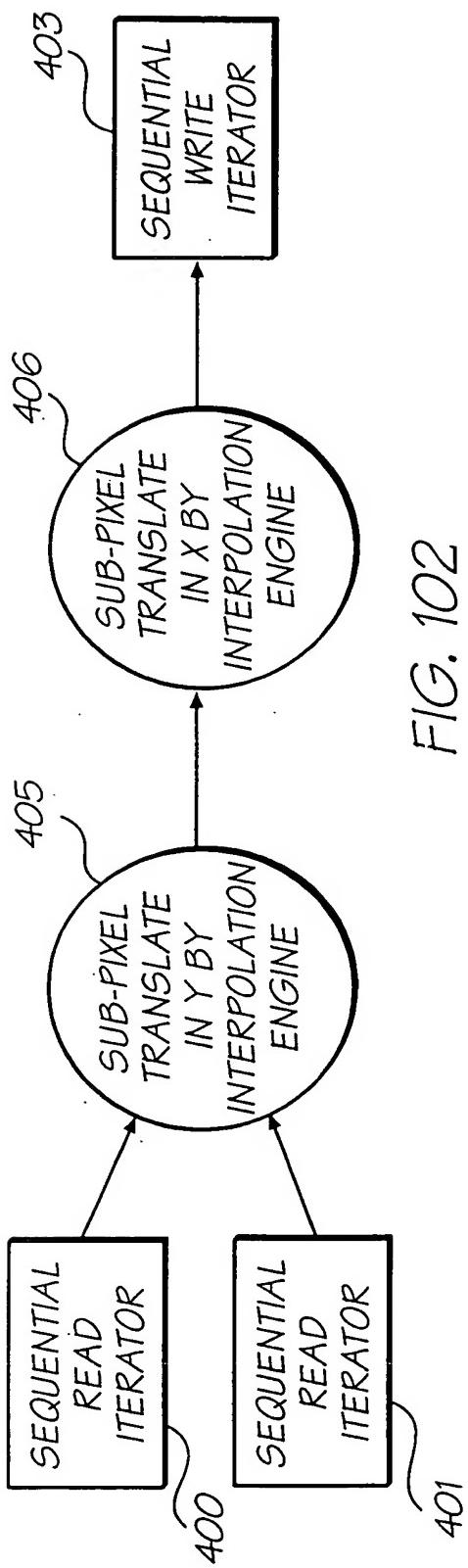
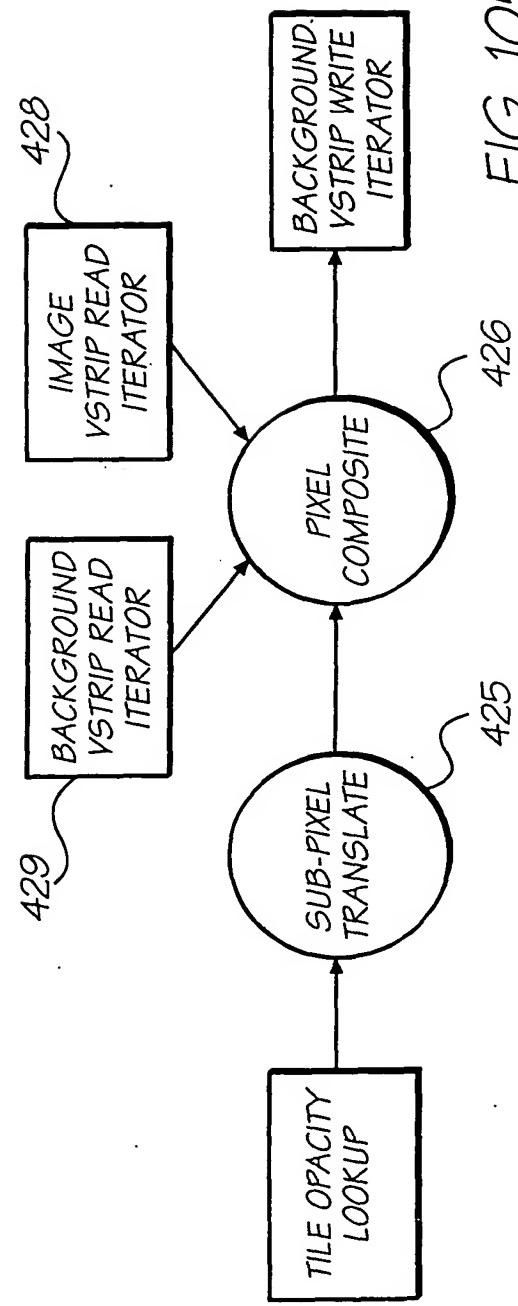
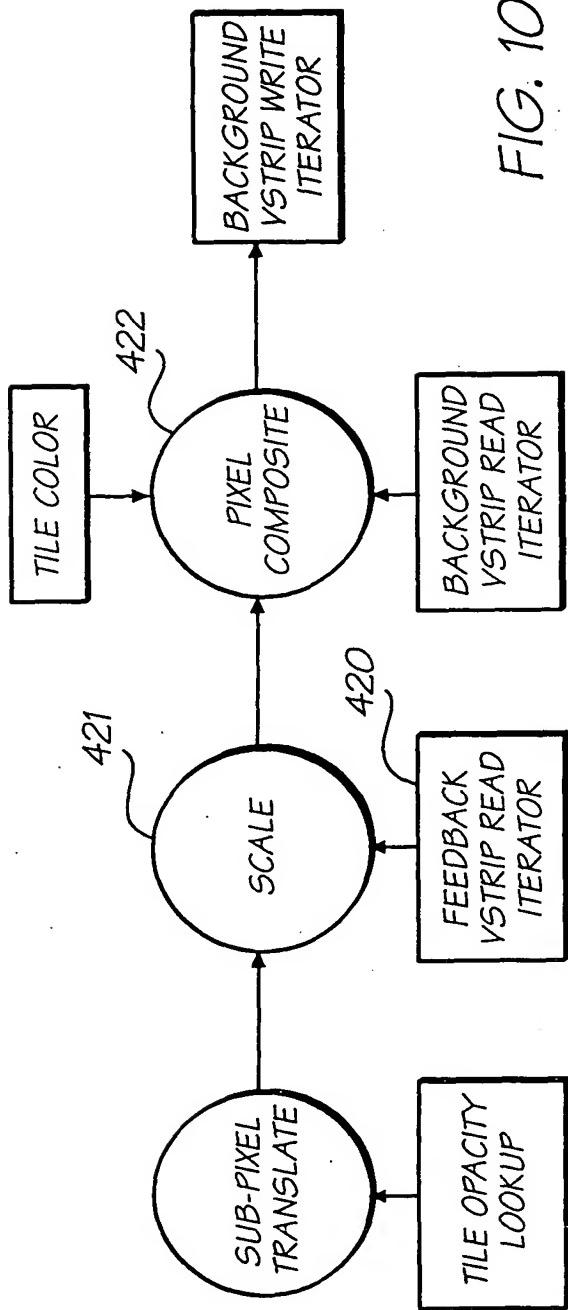


FIG. 100





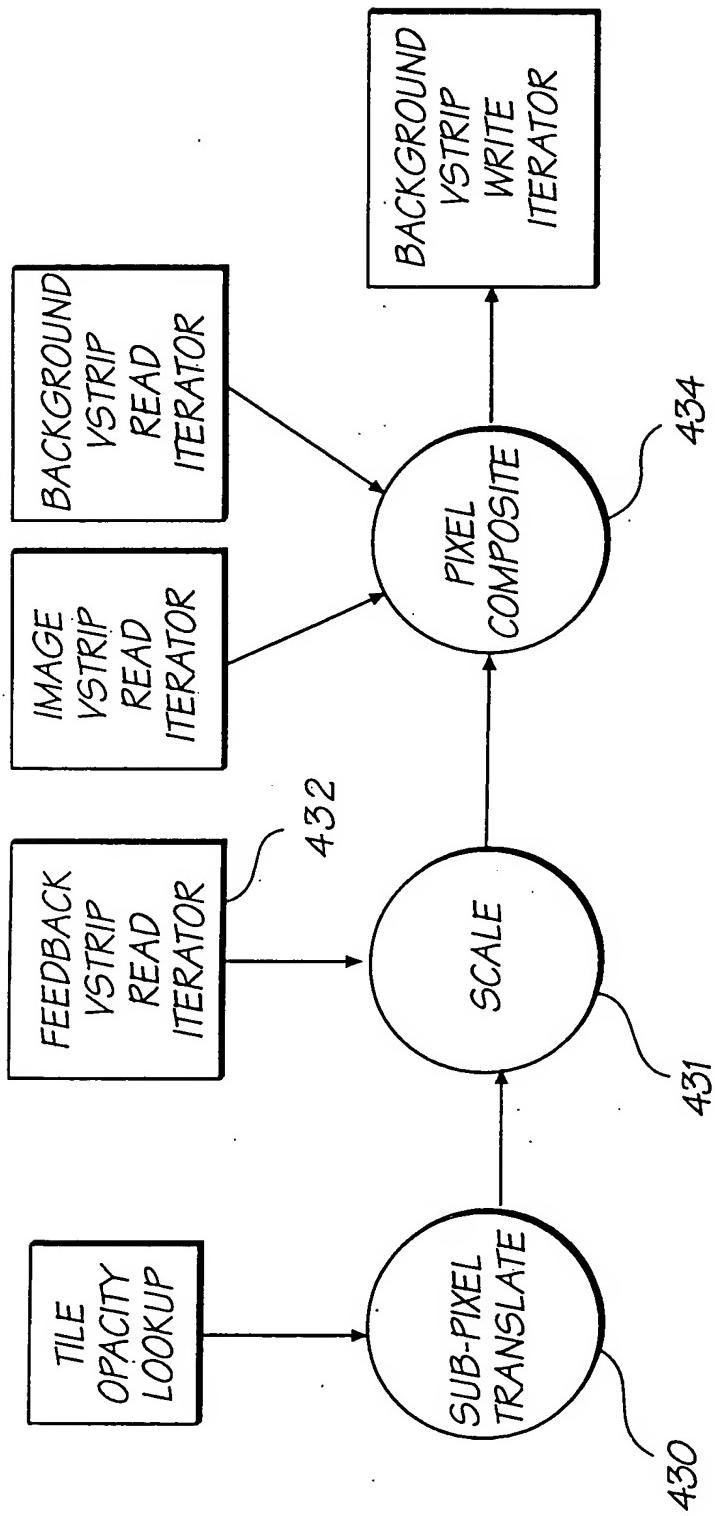


FIG. 106

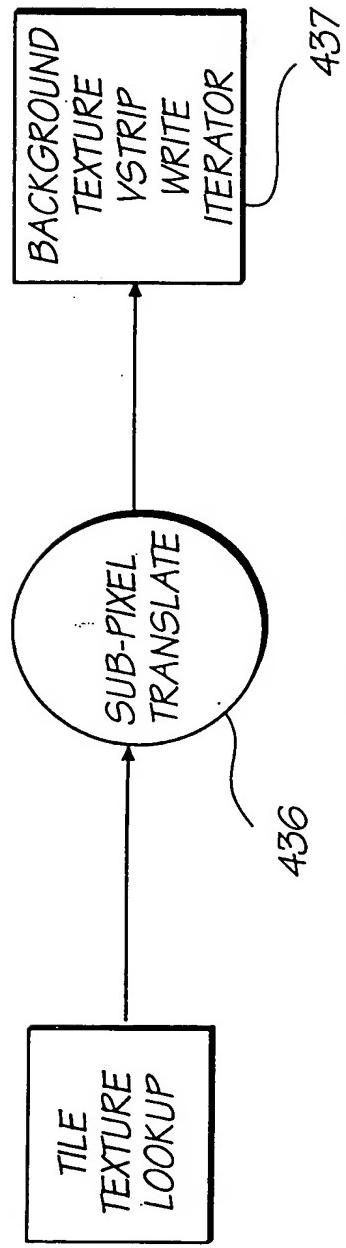


FIG. 107

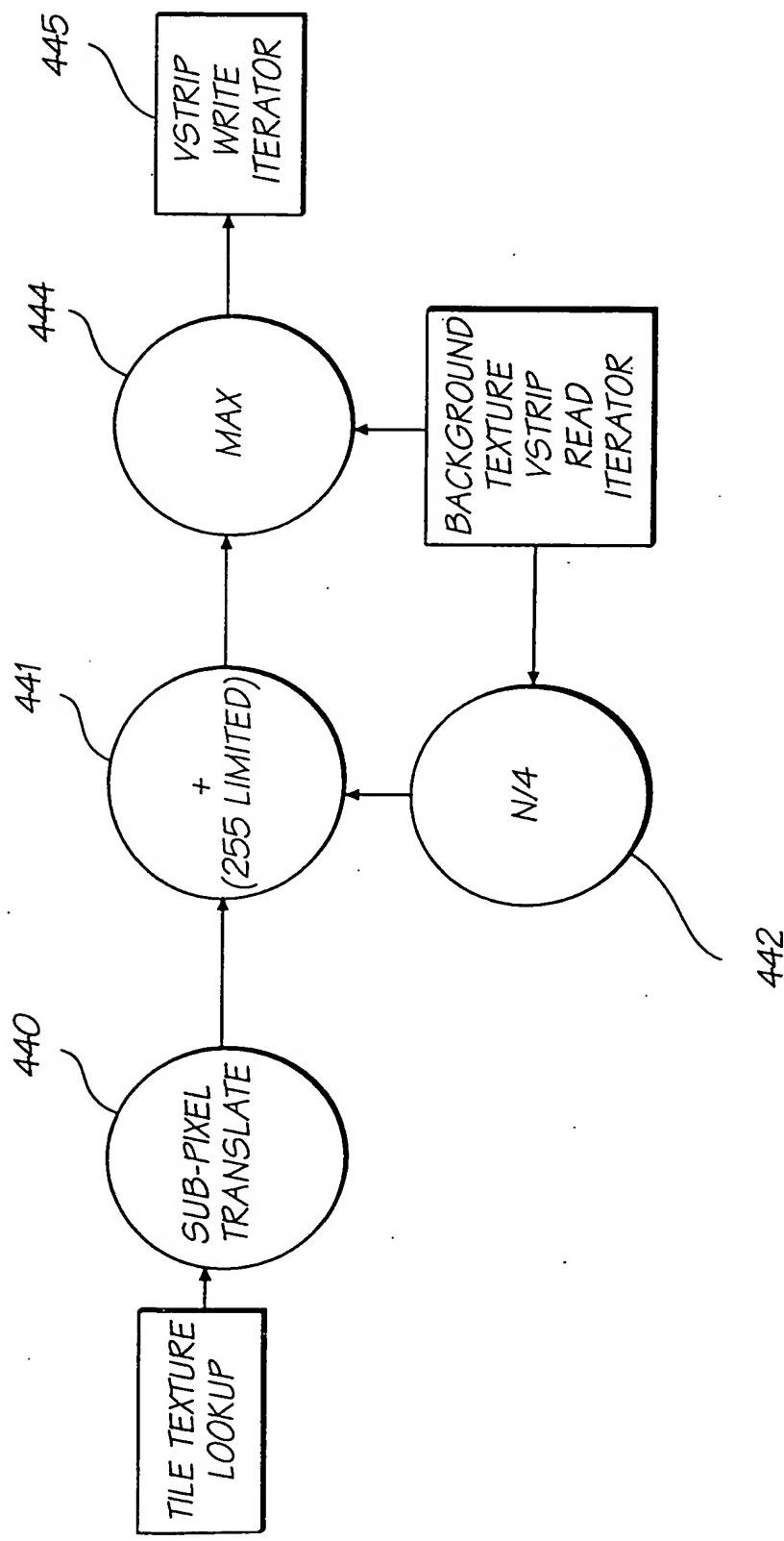


FIG. 108

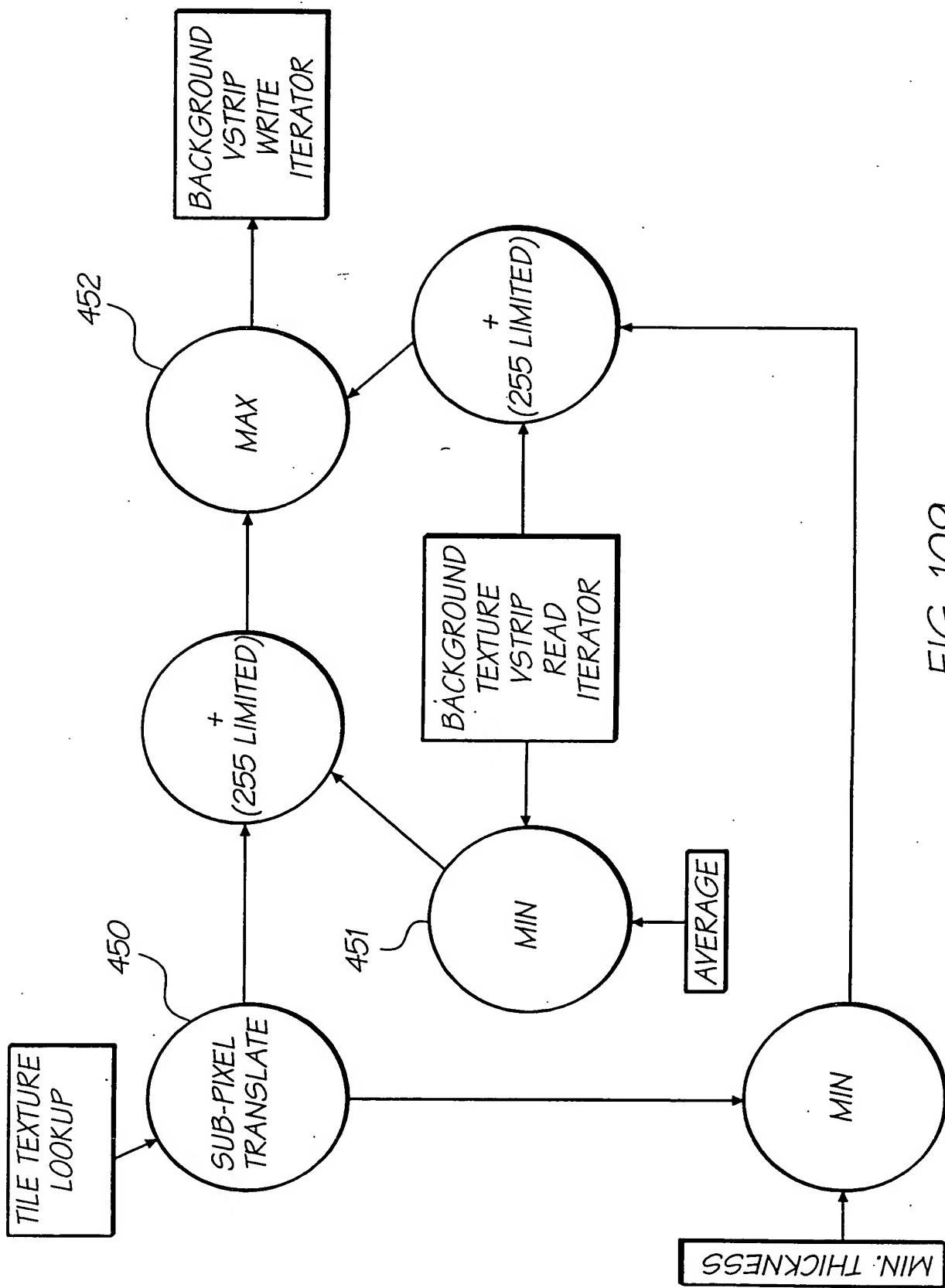


FIG. 109

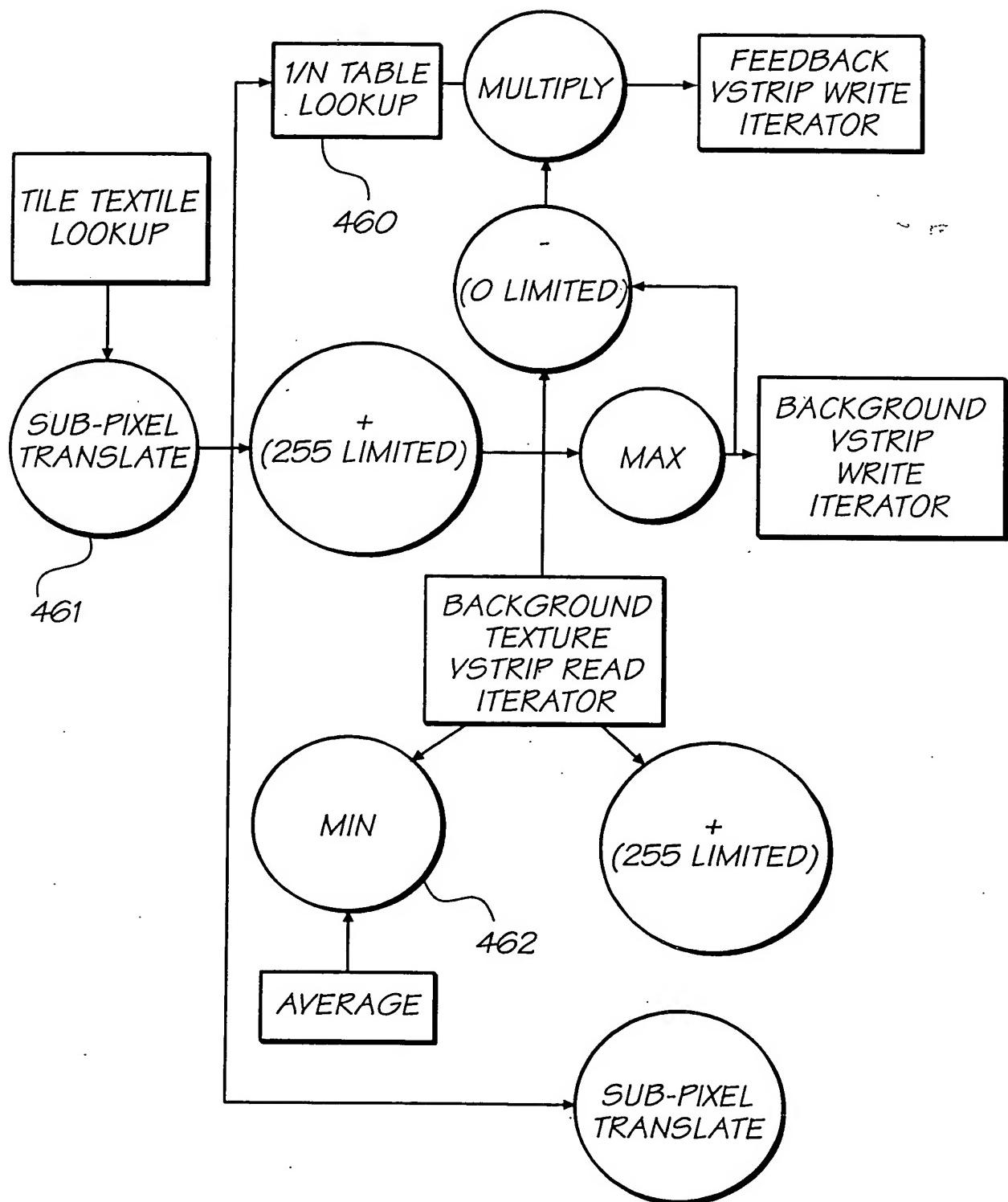


FIG. 110

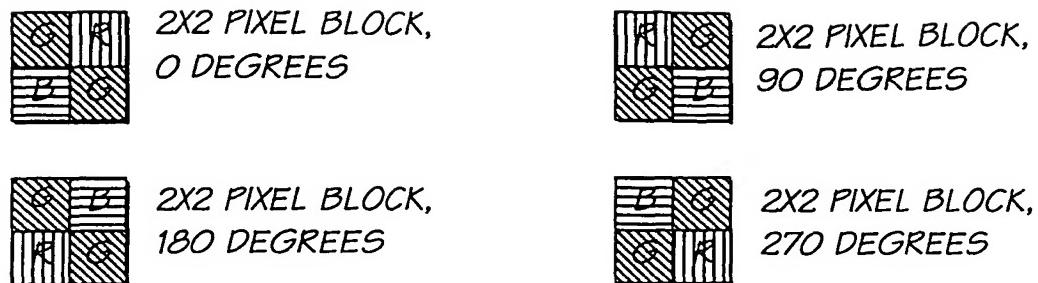


FIG. 111

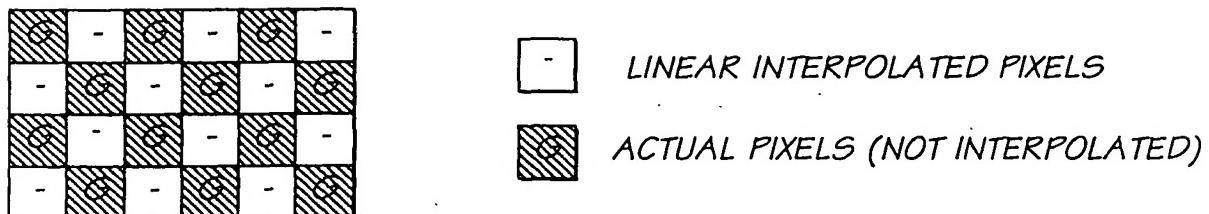


FIG. 112

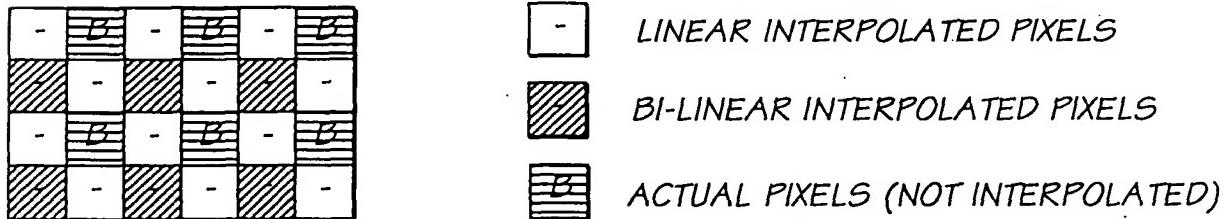


FIG. 113

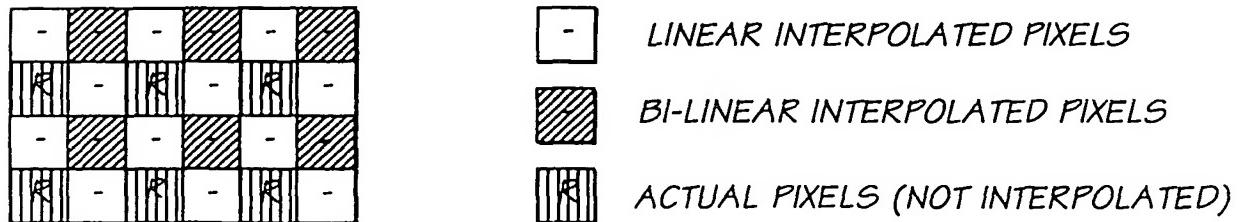


FIG. 114

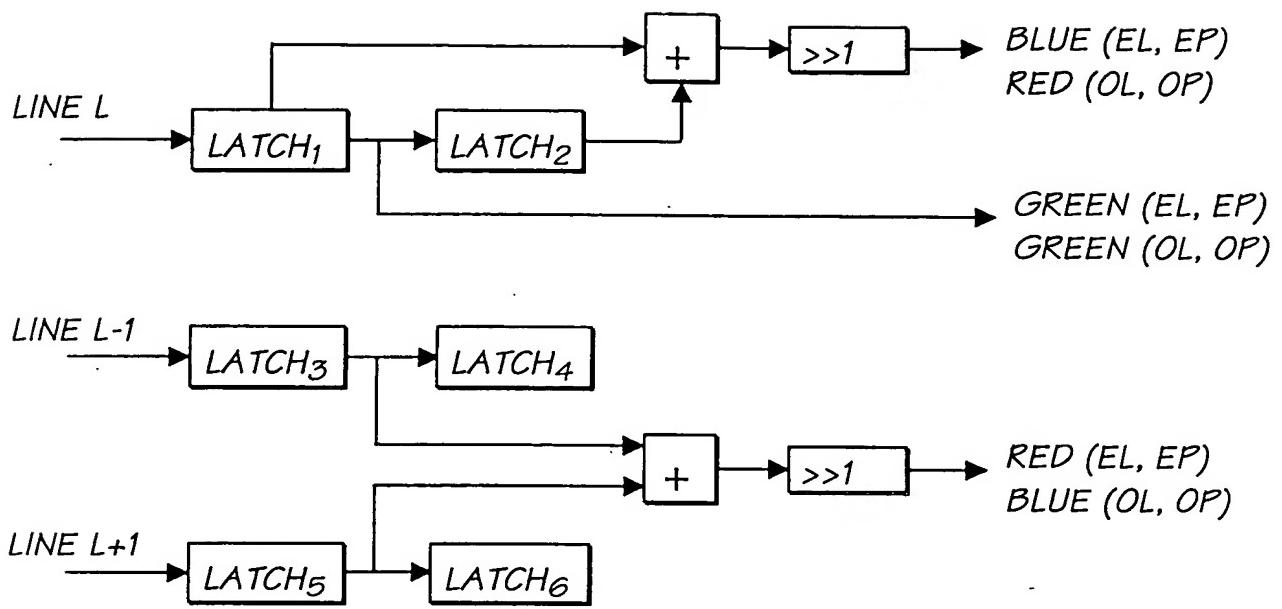


FIG. 115

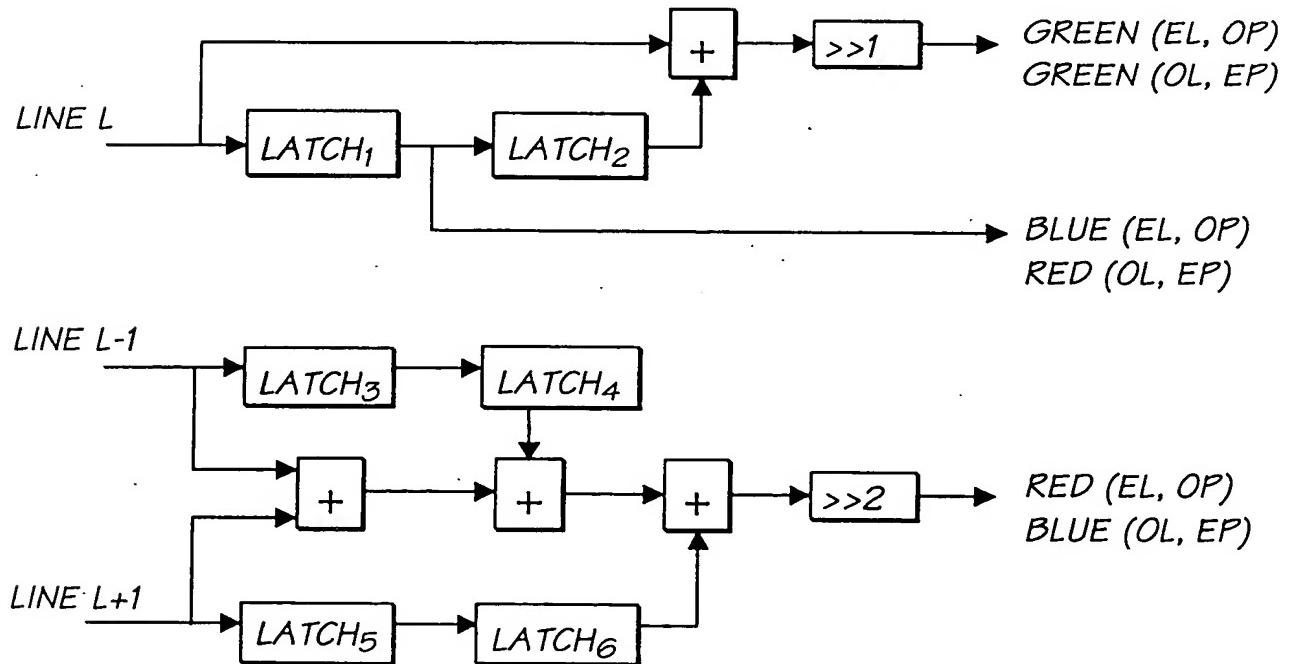


FIG. 116

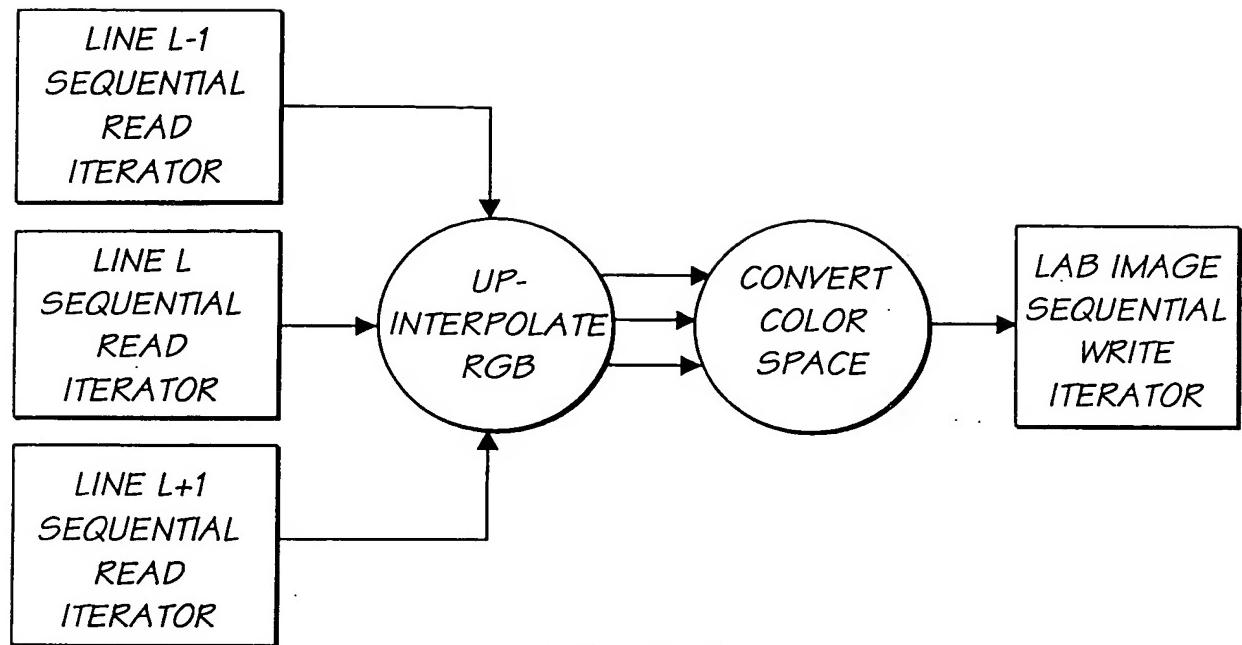


FIG. 117

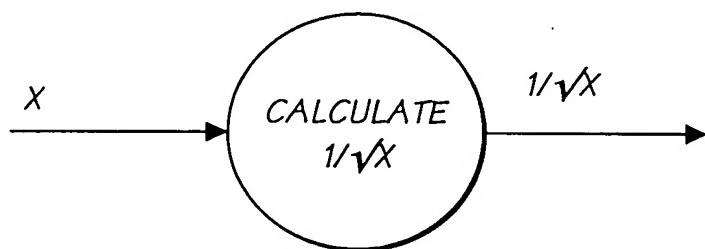


FIG. 118

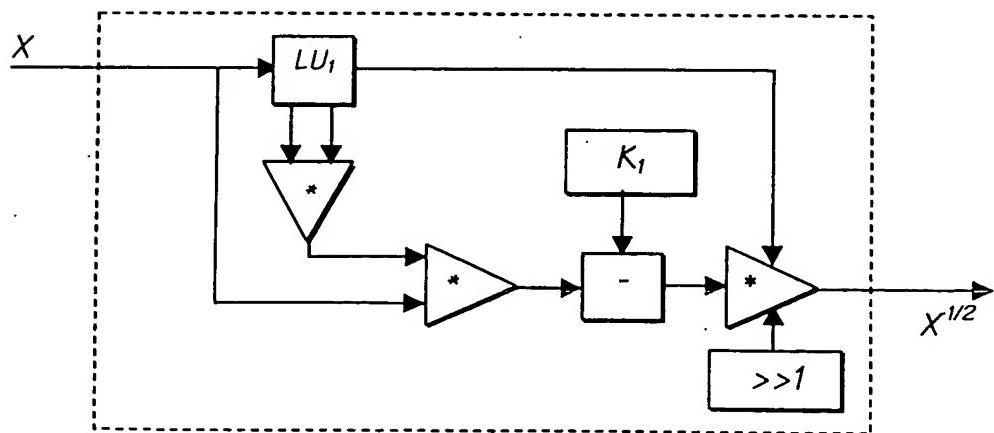


FIG. 119

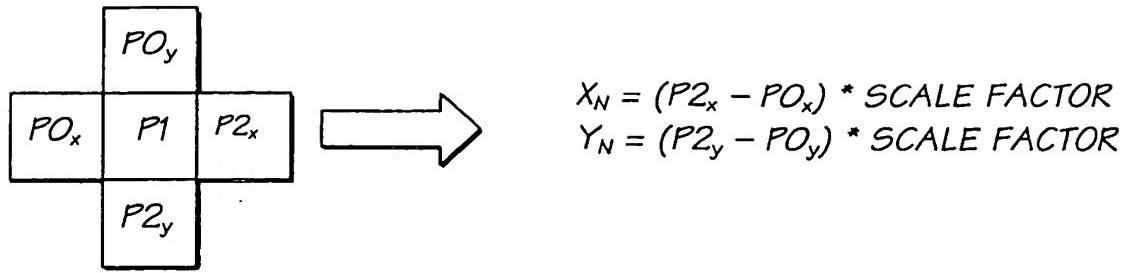


FIG. 120

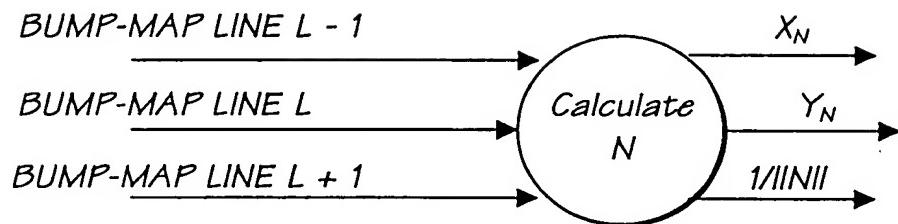


FIG. 121

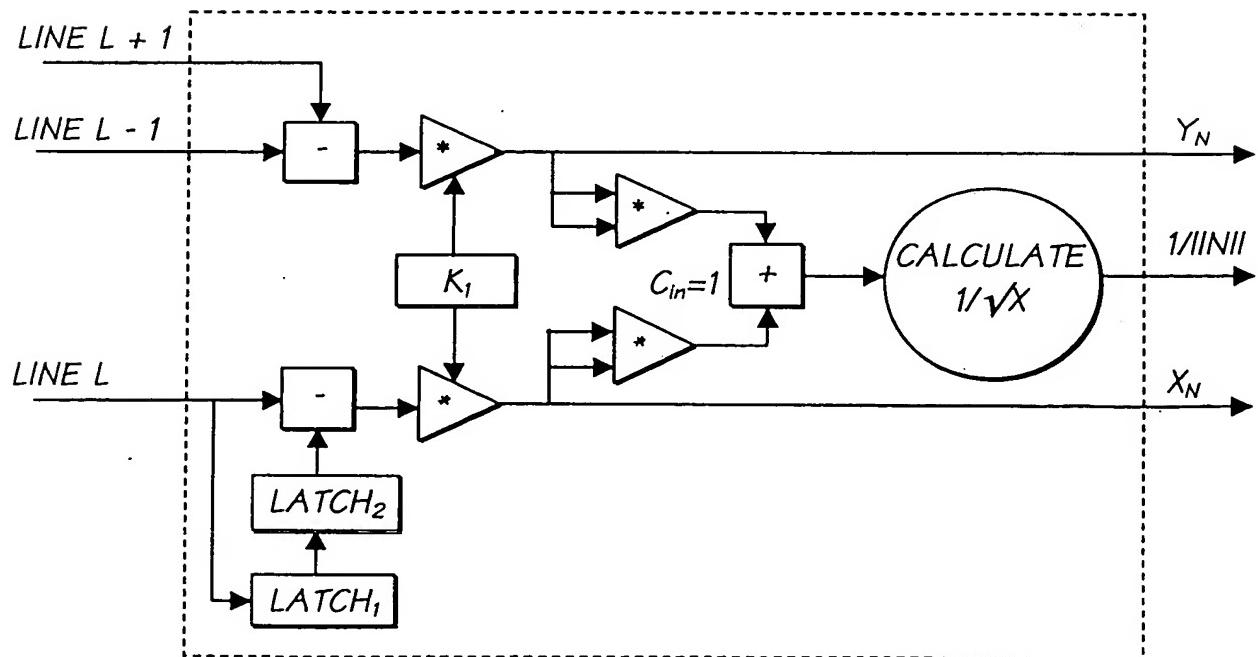


FIG. 122

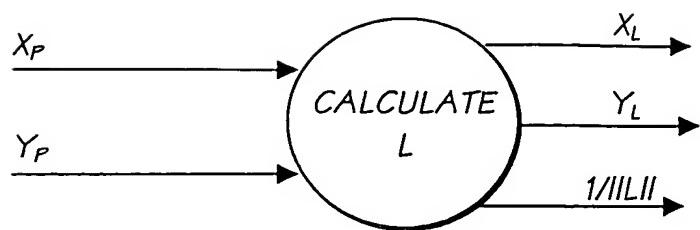


FIG. 123

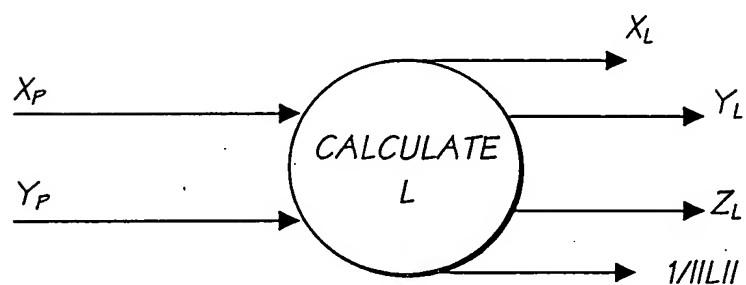


FIG. 124

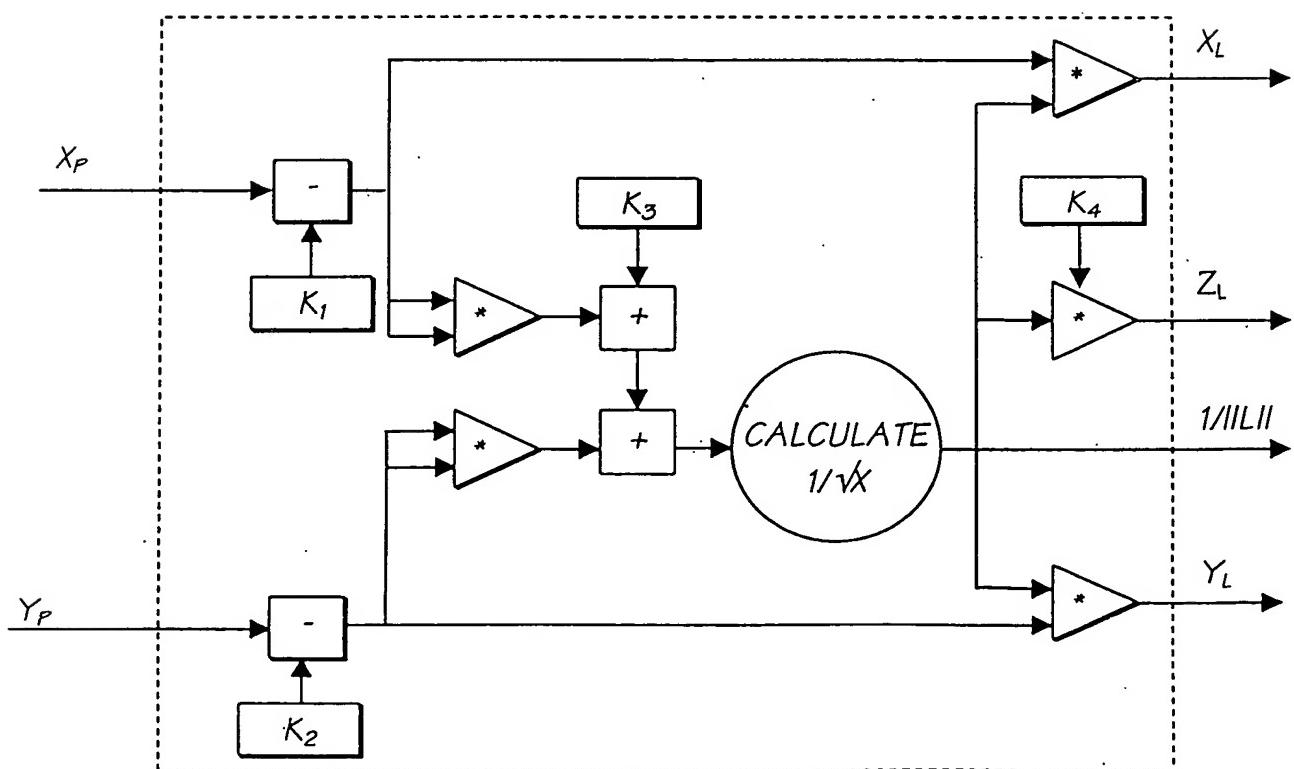


FIG. 125

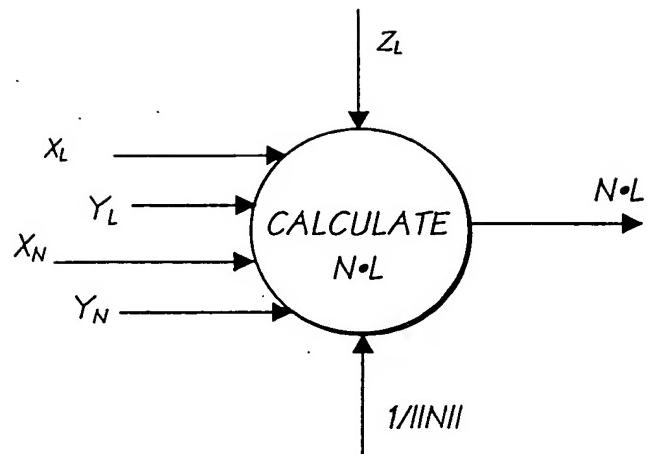


FIG. 126

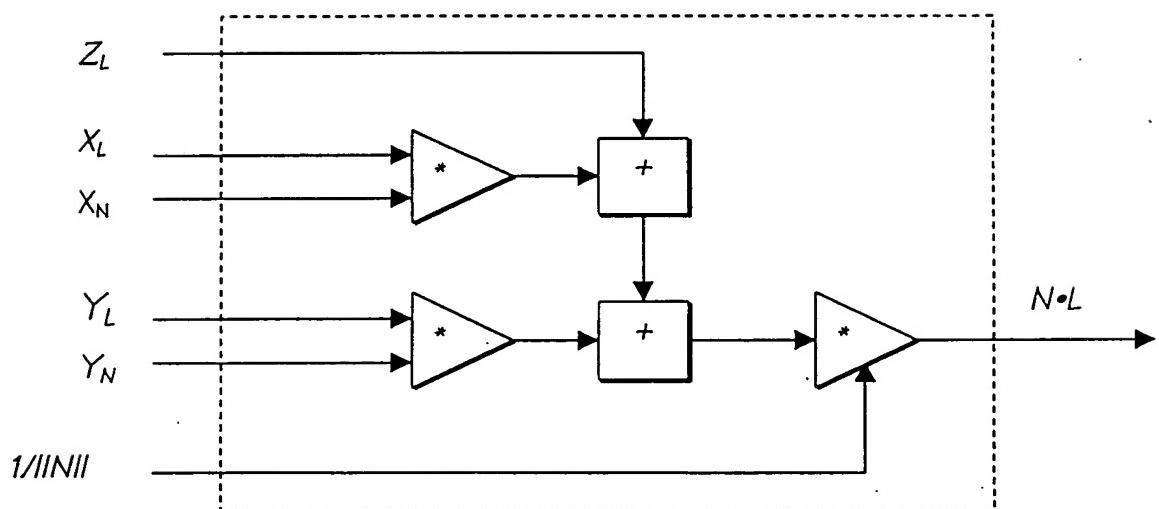


FIG. 127

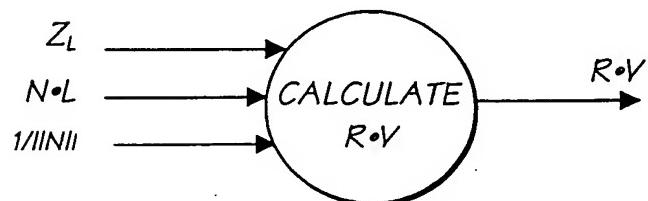


FIG. 128

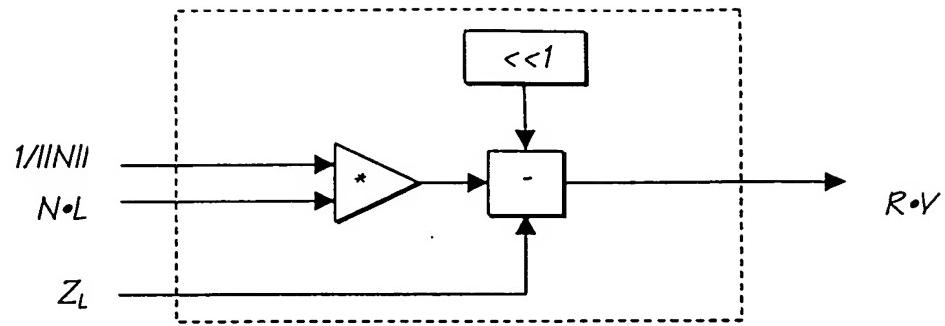


FIG. 129

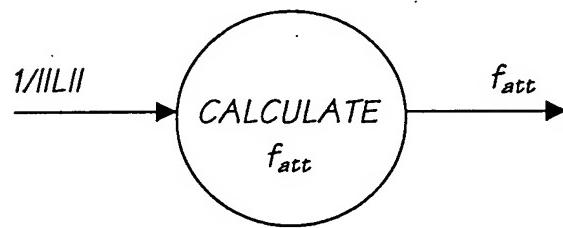


FIG. 130

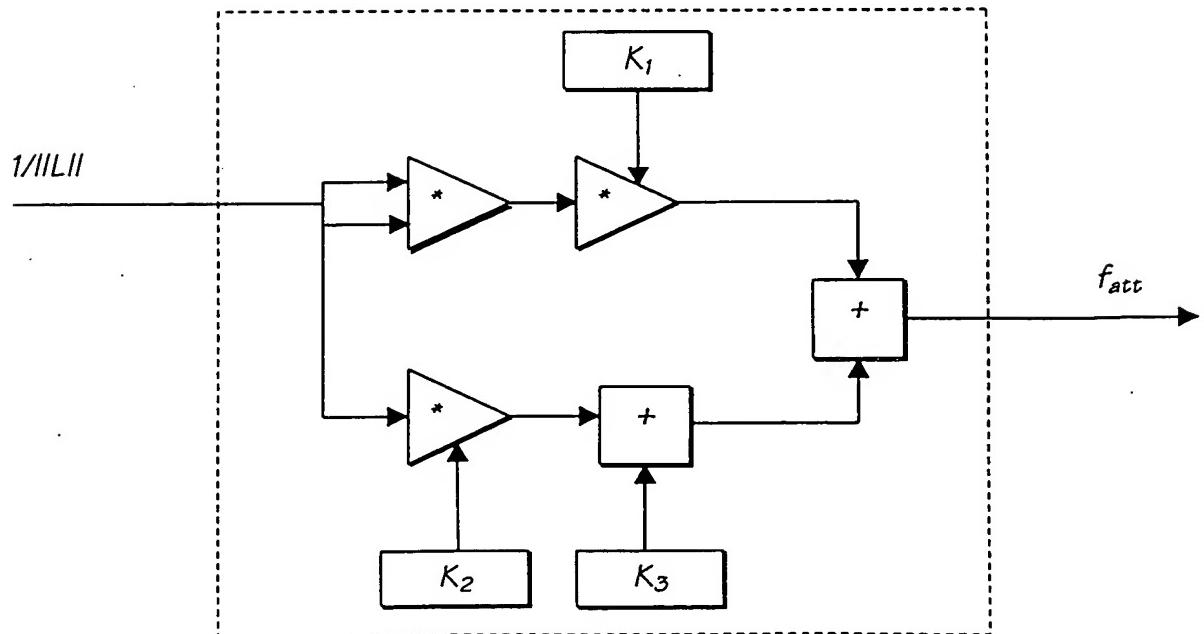


FIG. 131

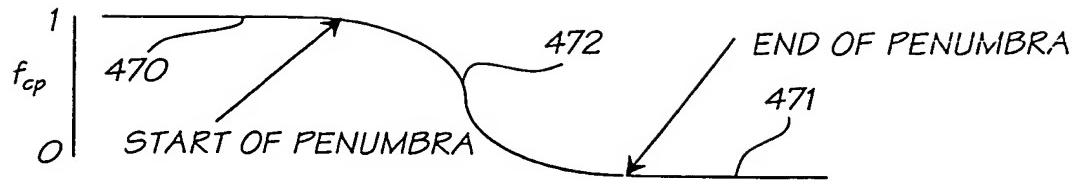


FIG. 132

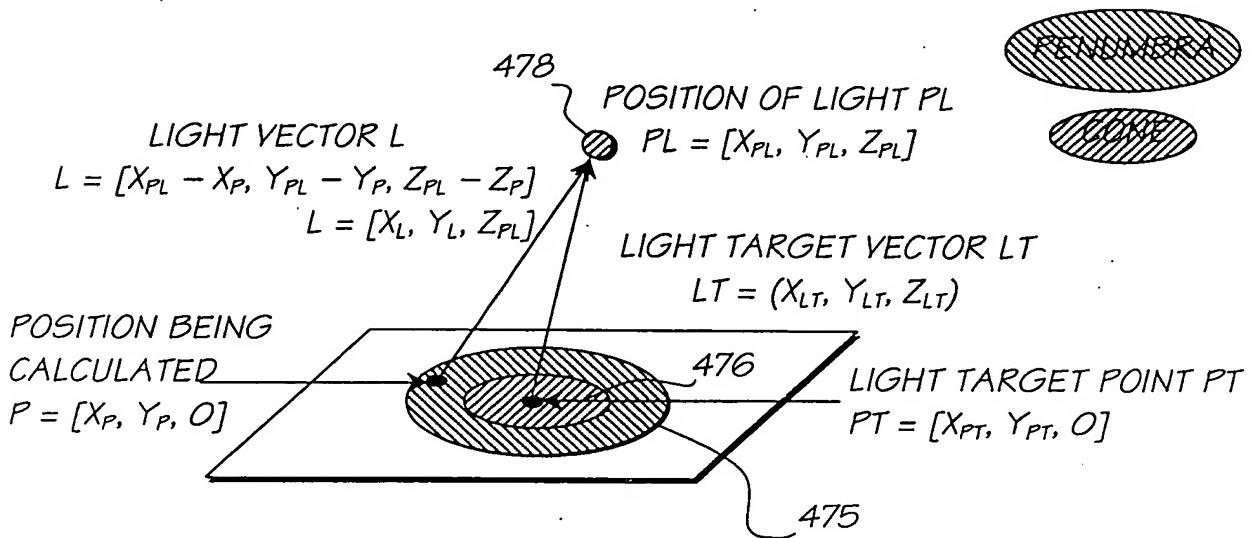


FIG. 133

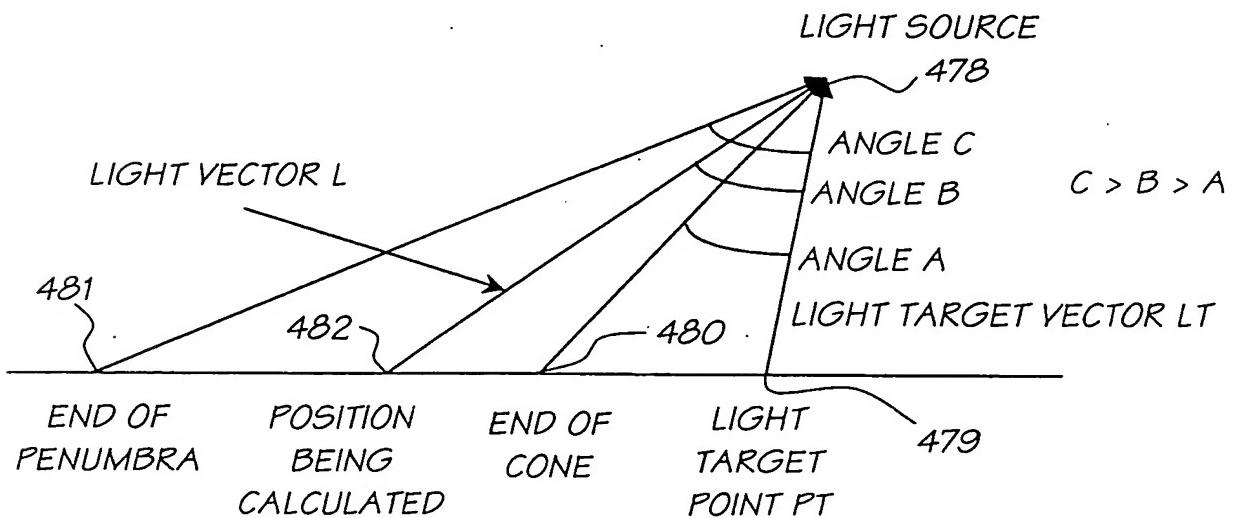


FIG. 134

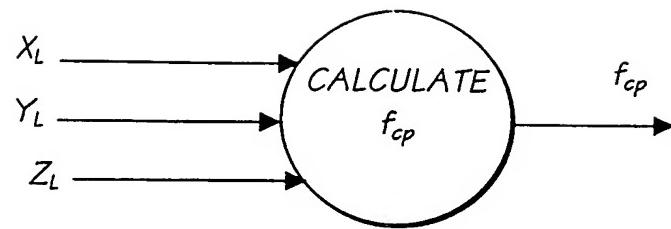


FIG. 135

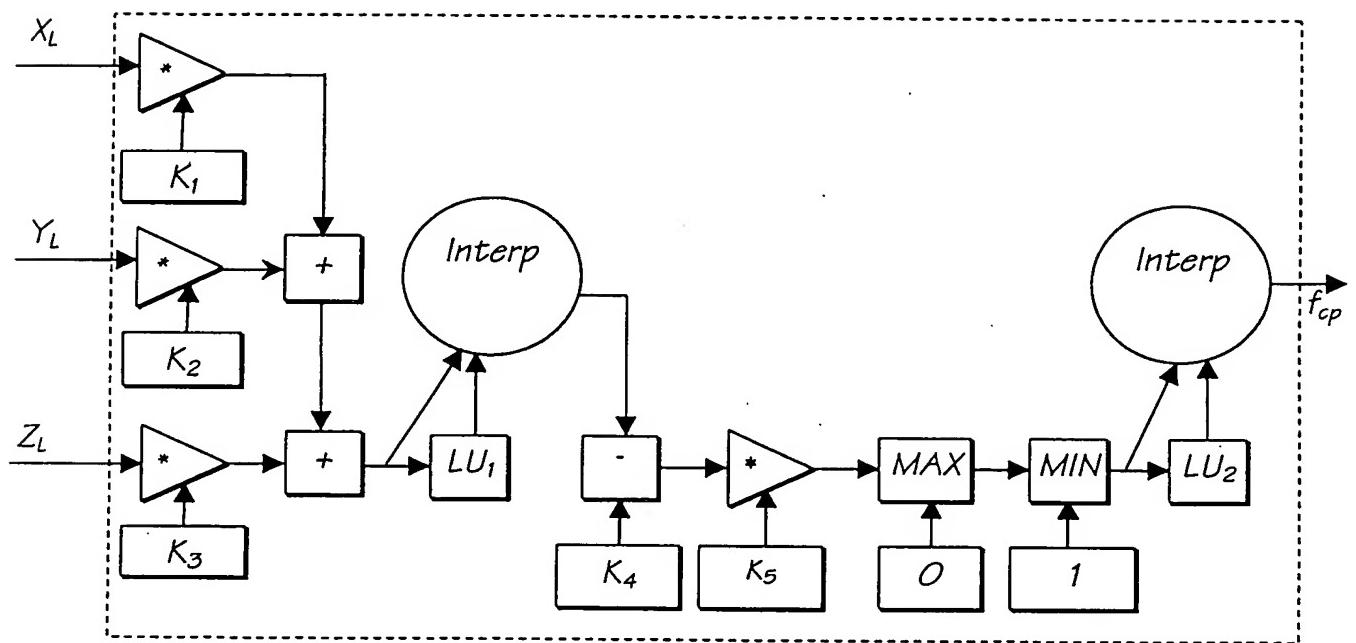


FIG. 136

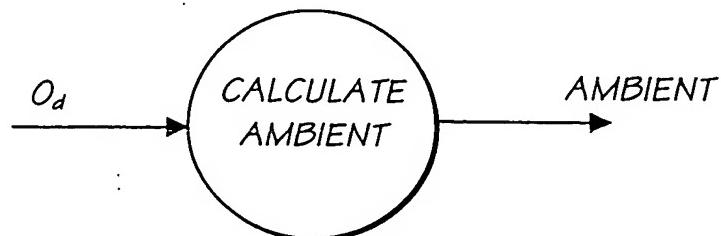


FIG. 137

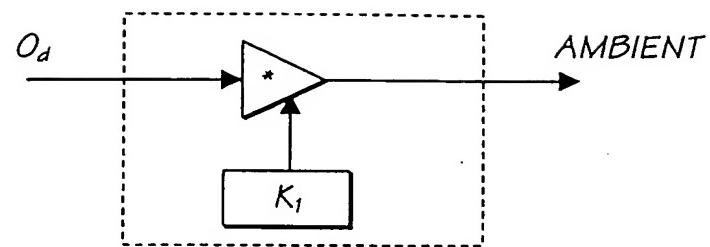


FIG. 138

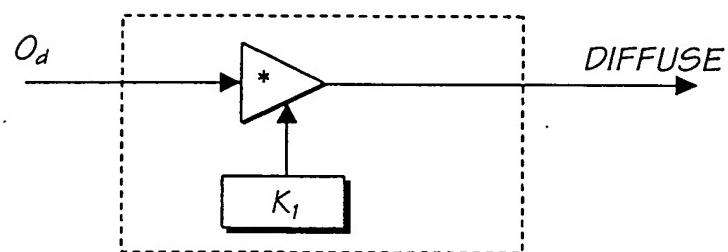


FIG. 139

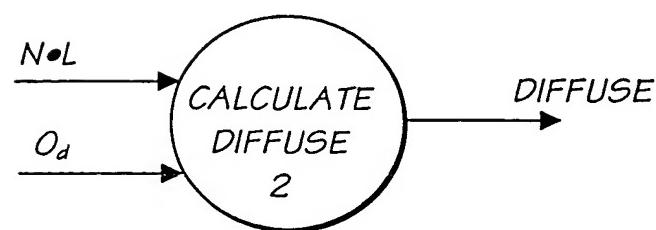


FIG. 140

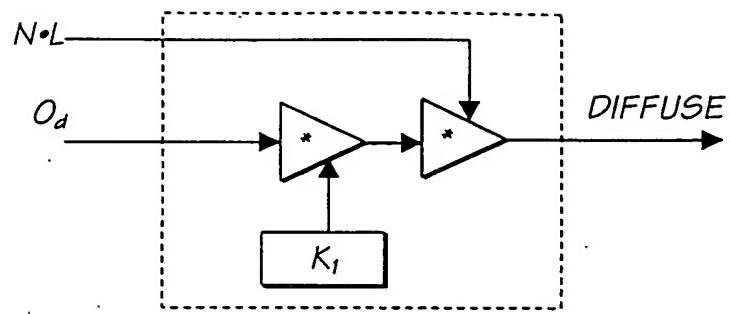


FIG. 141

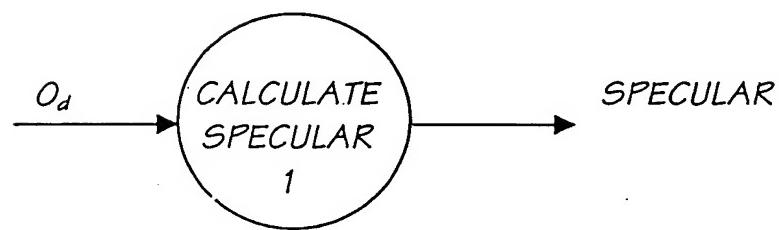


FIG. 142

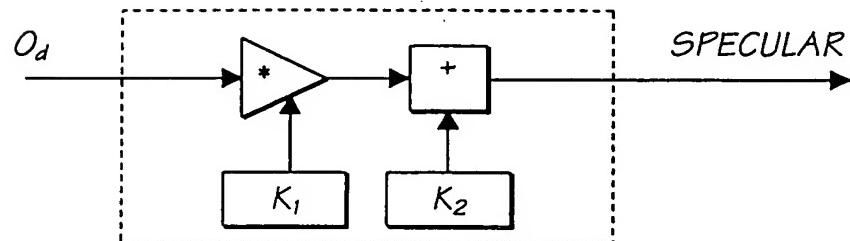


FIG. 143

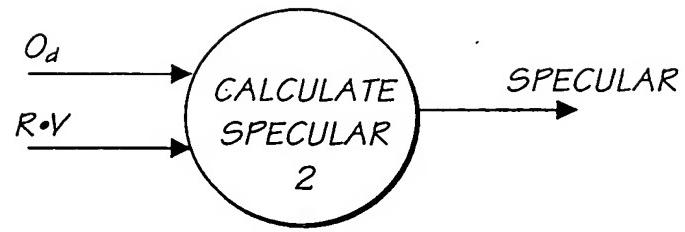


FIG. 144

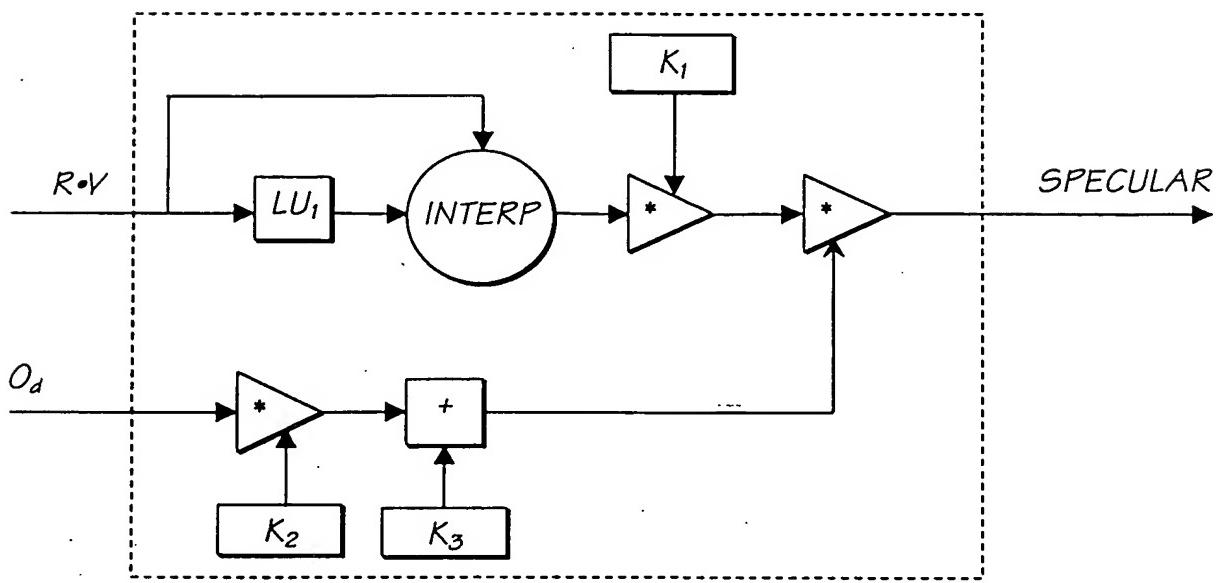


FIG. 145

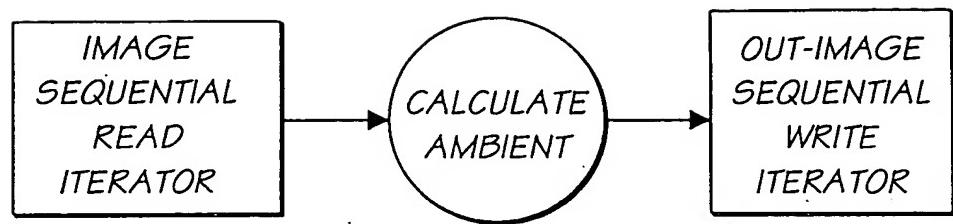


FIG. 146

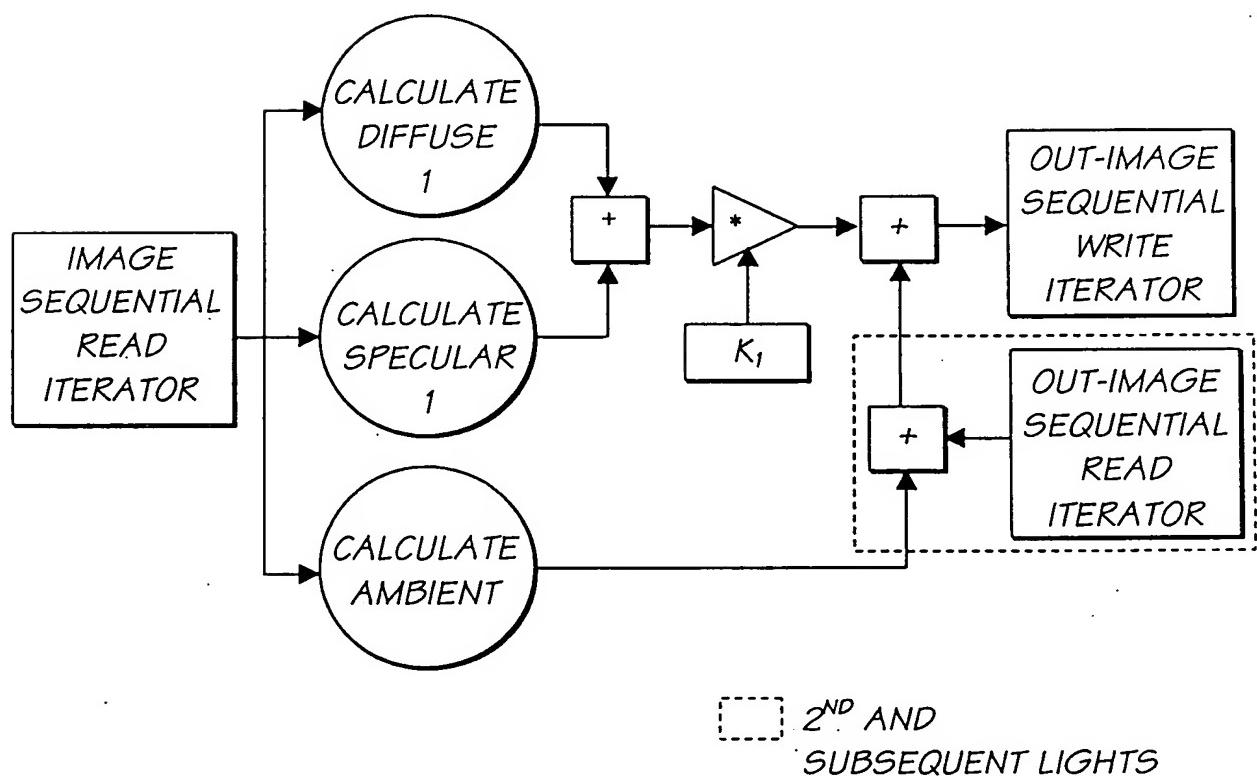


FIG. 147

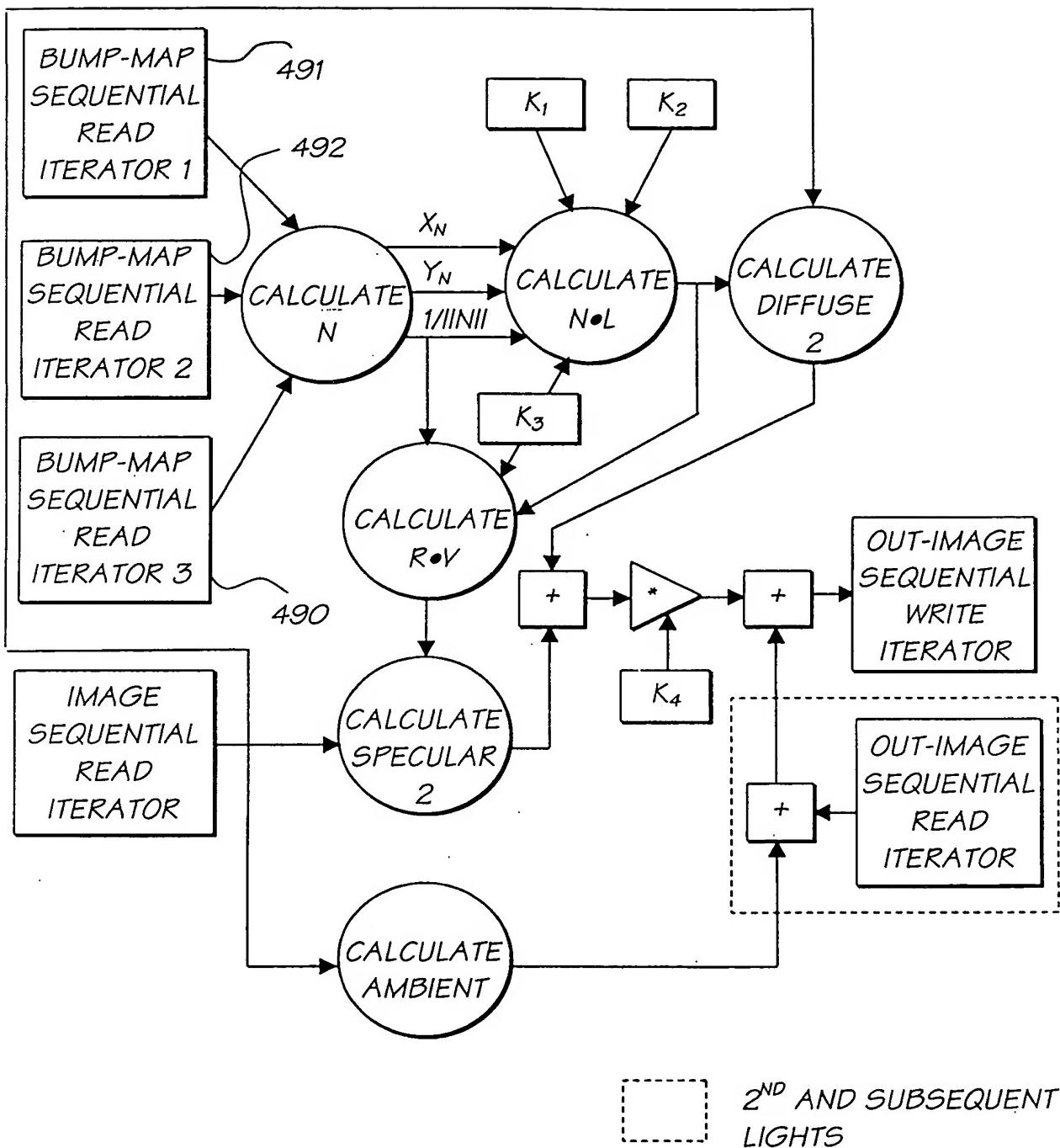


FIG. 148

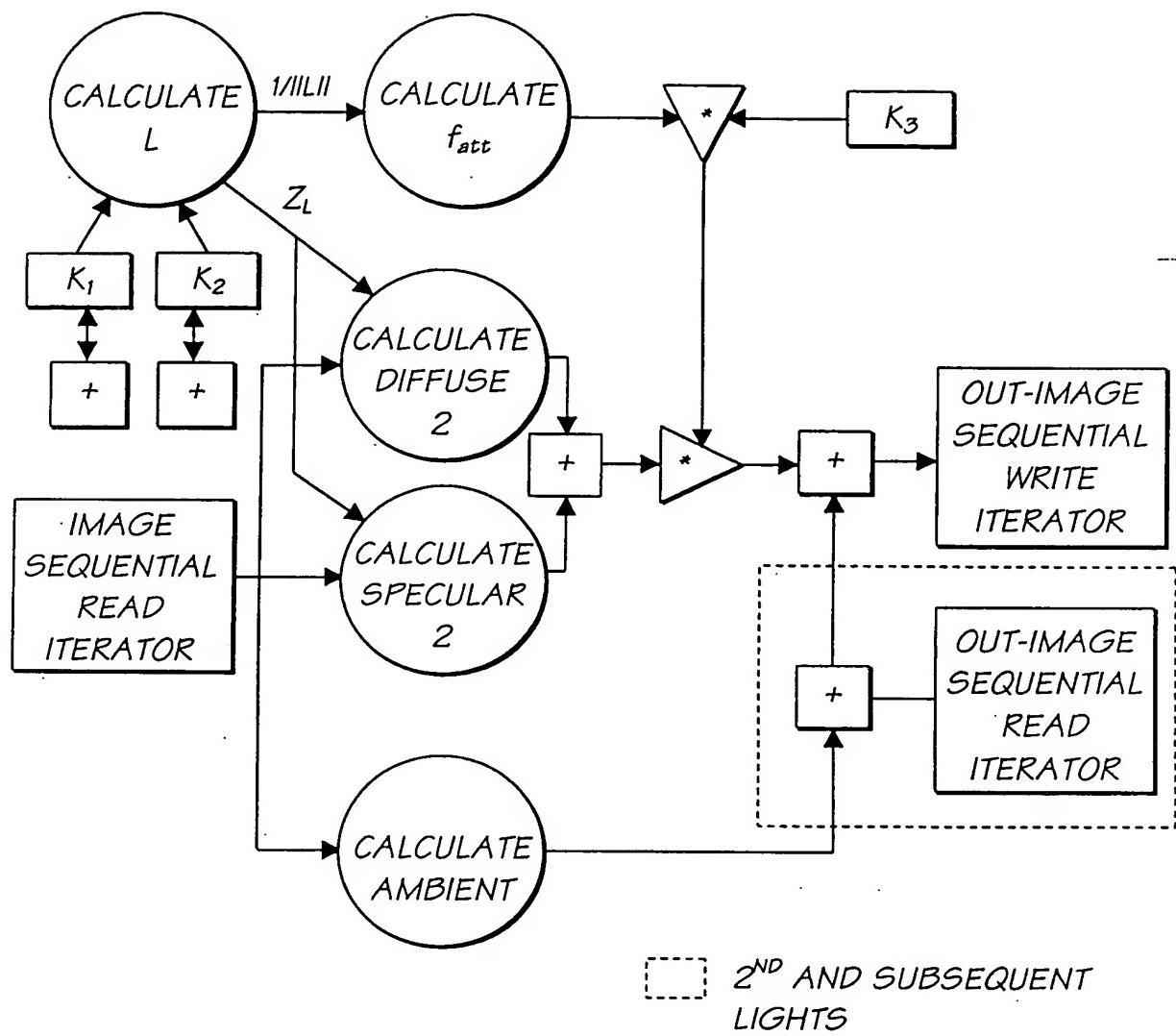


FIG. 149

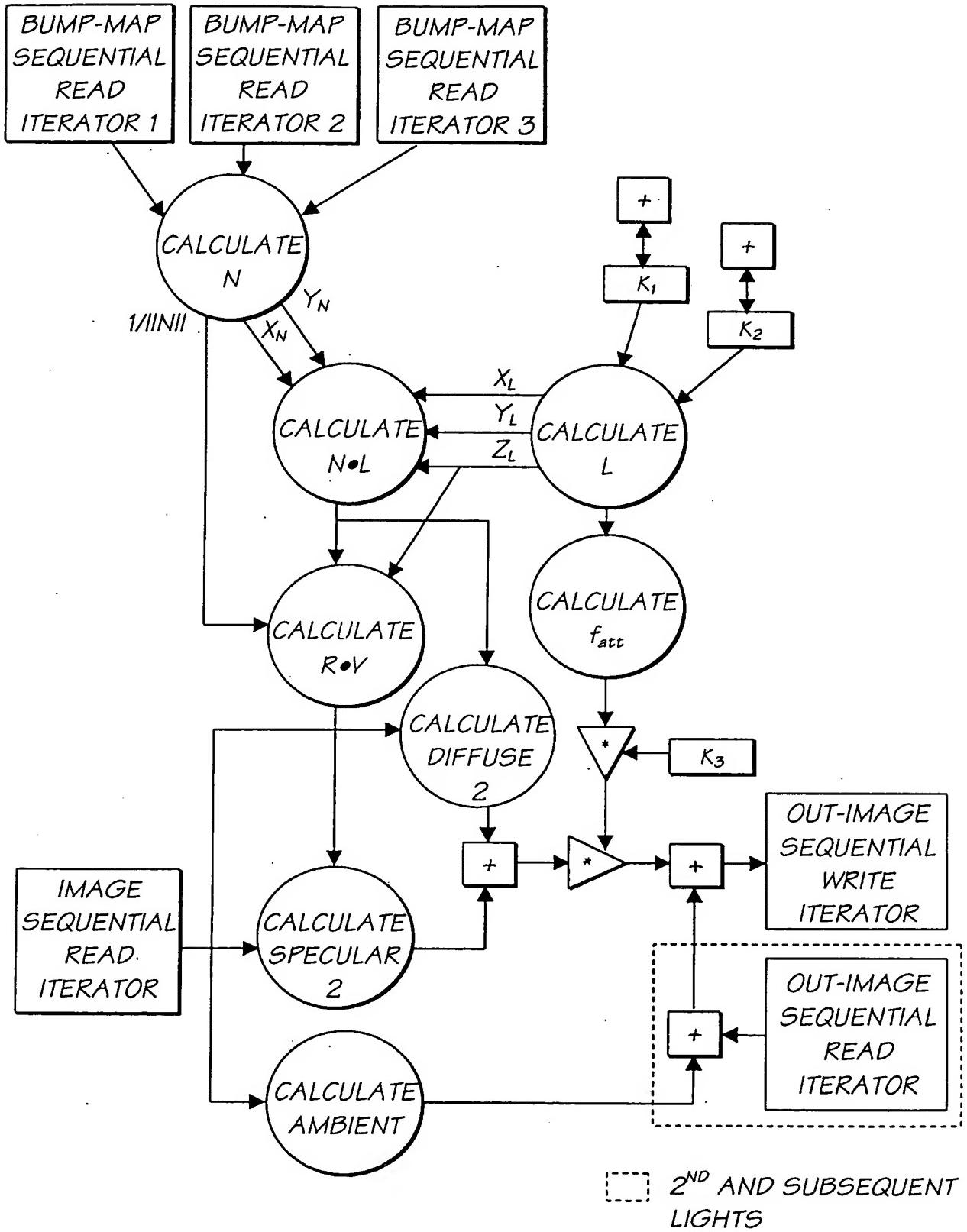


FIG. 150

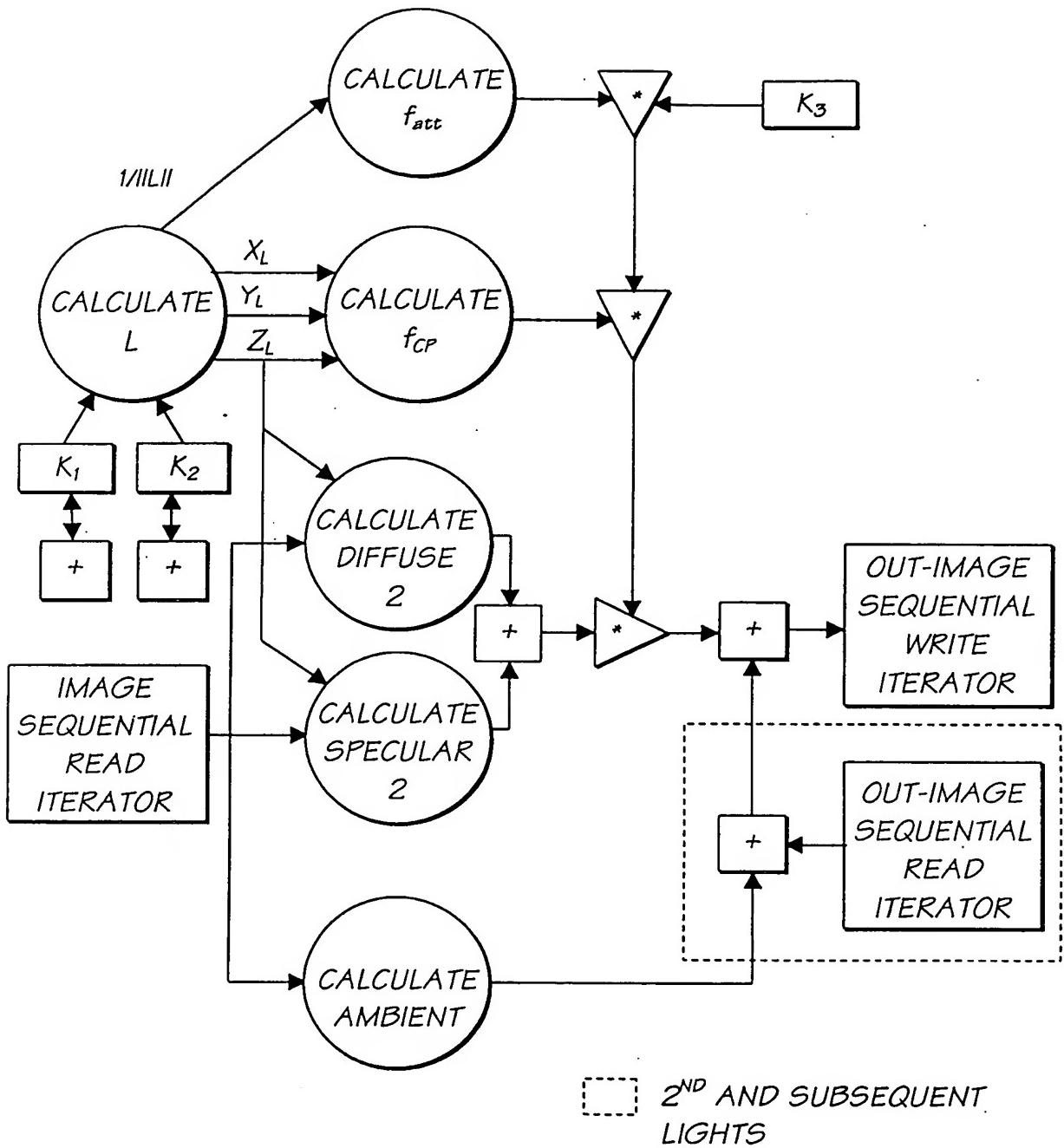


FIG. 151

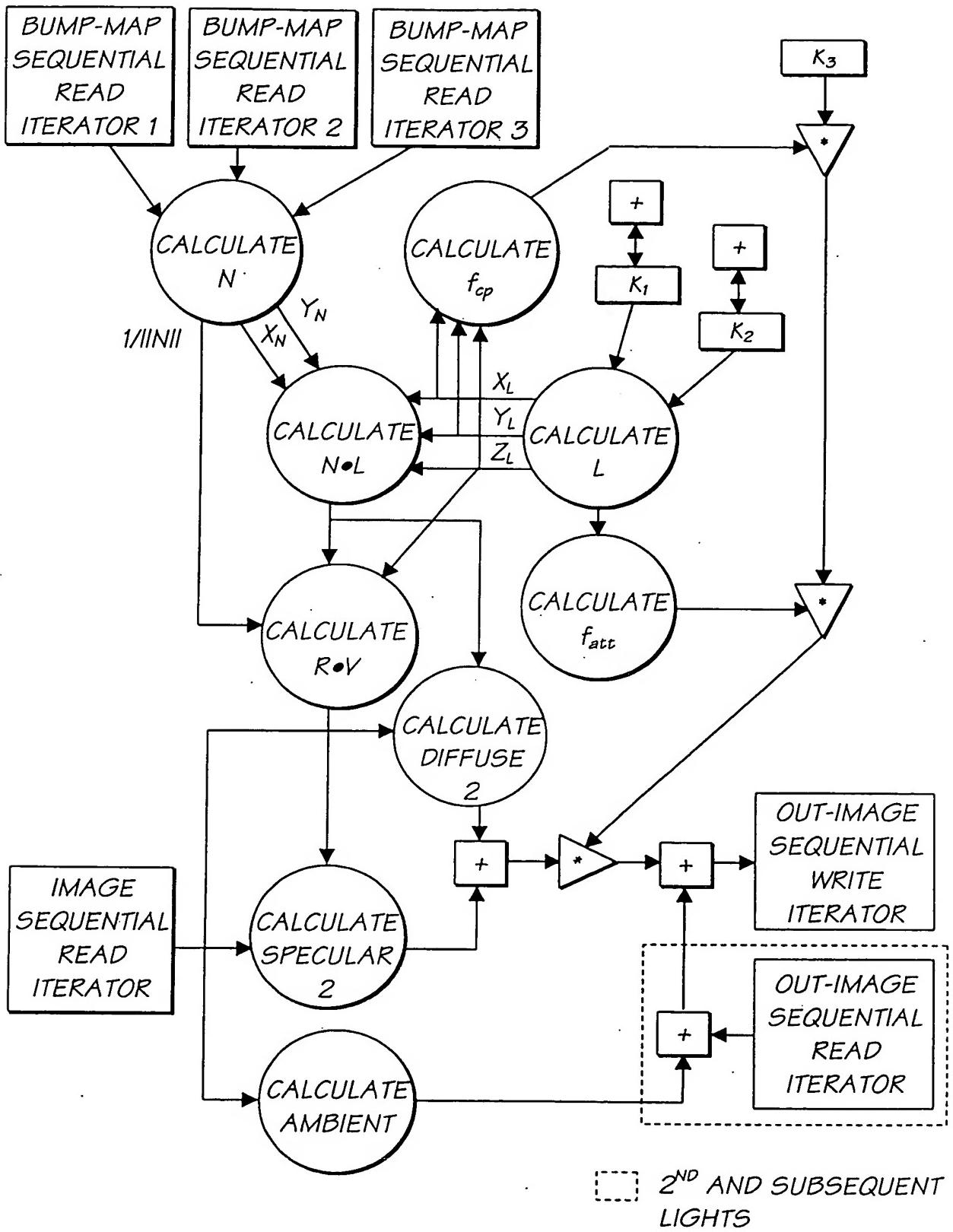


FIG. 152

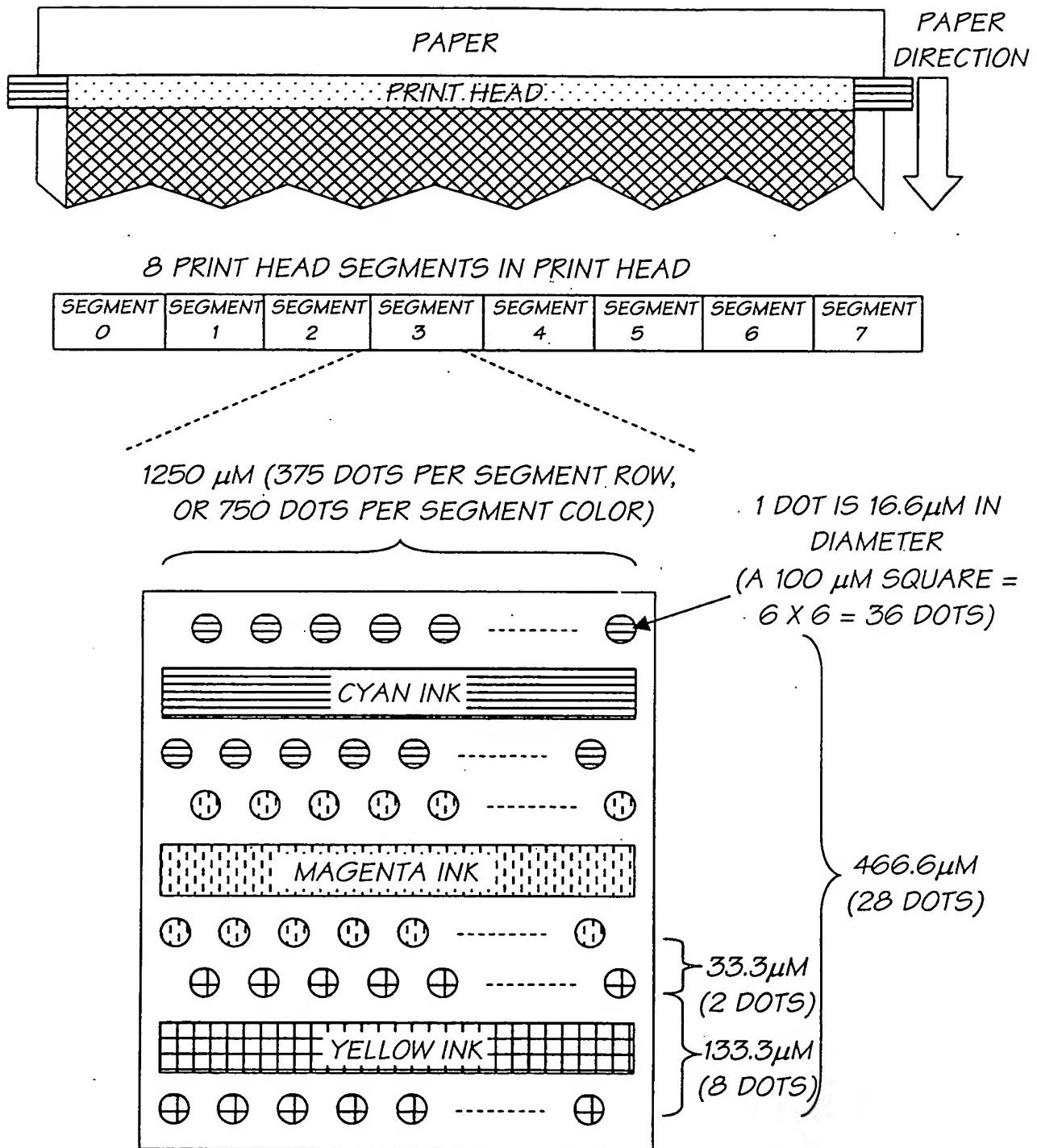


FIG. 153

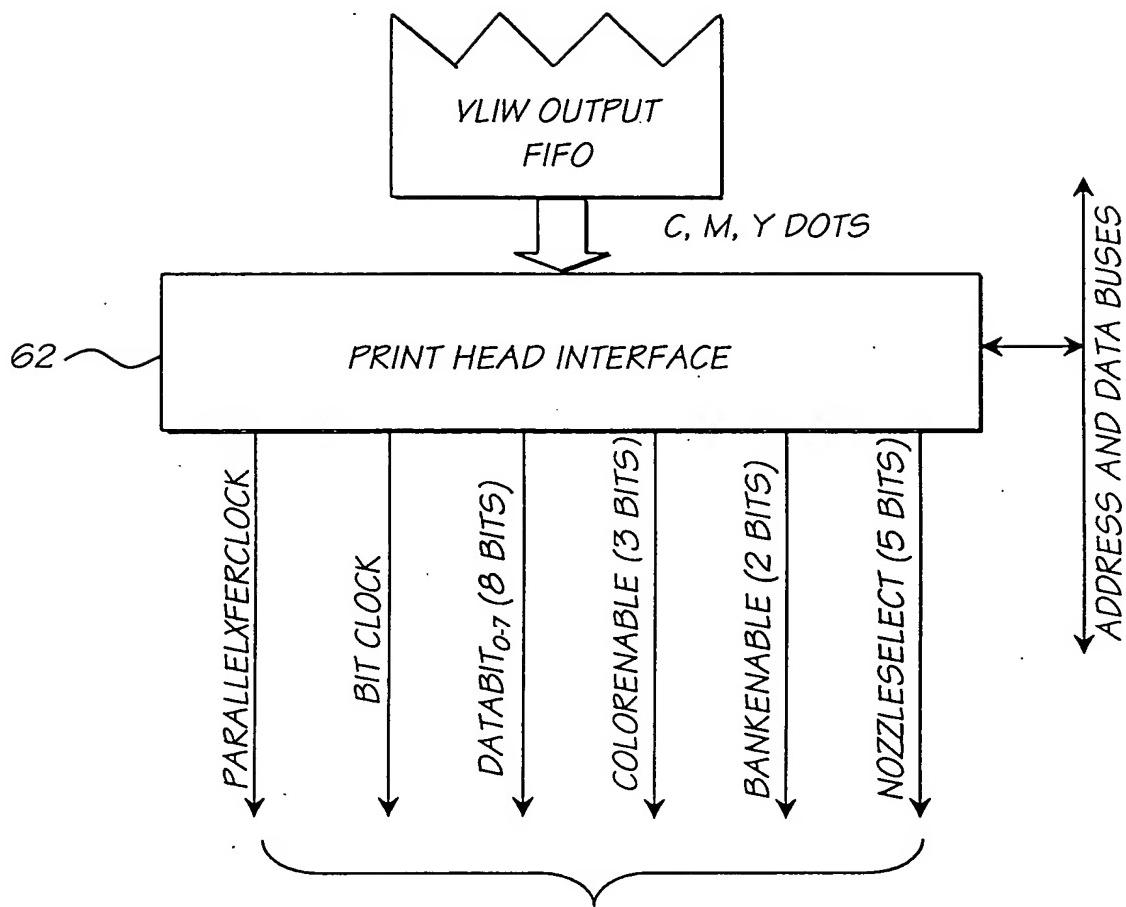
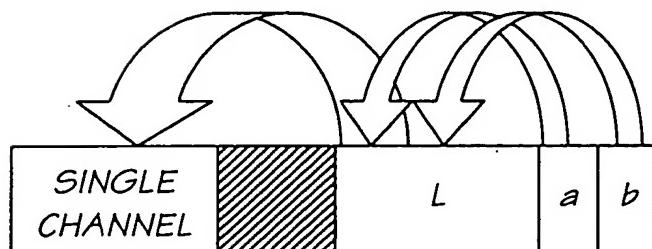


FIG. 154



BECOMES:

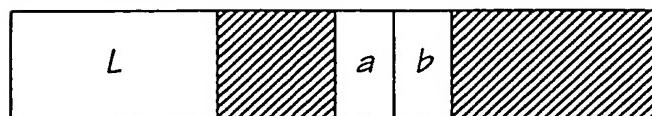


FIG. 155

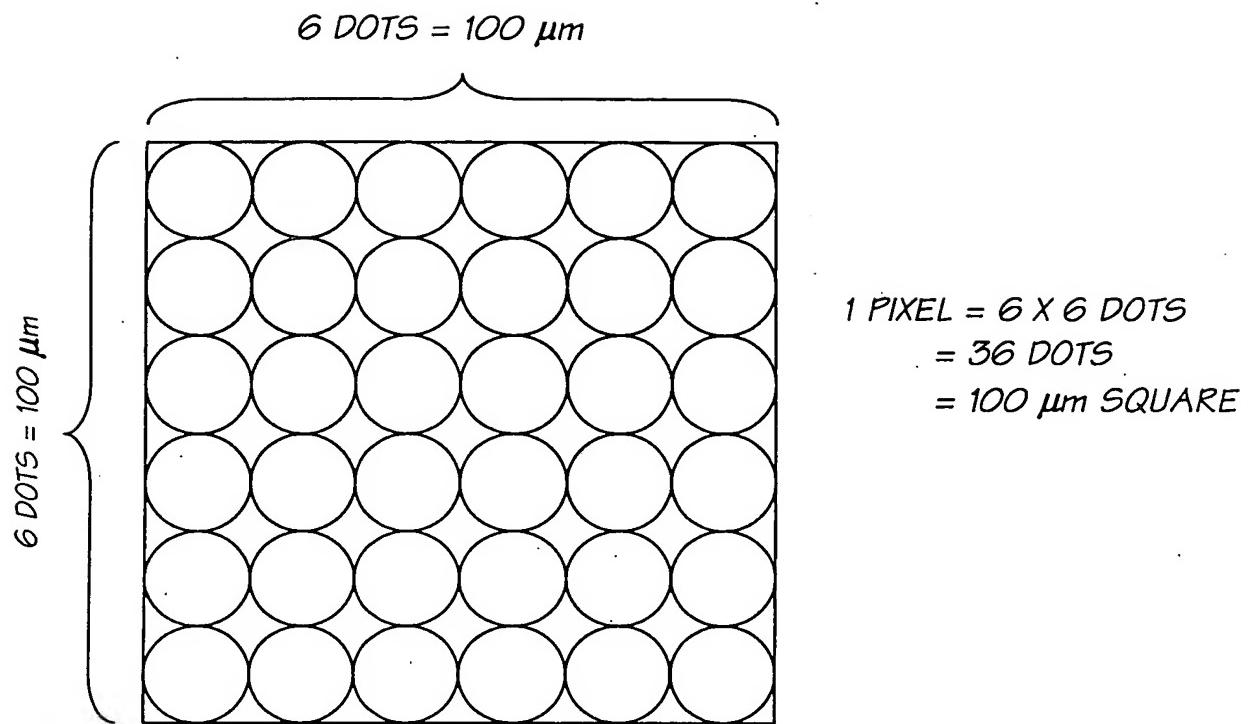


FIG. 156

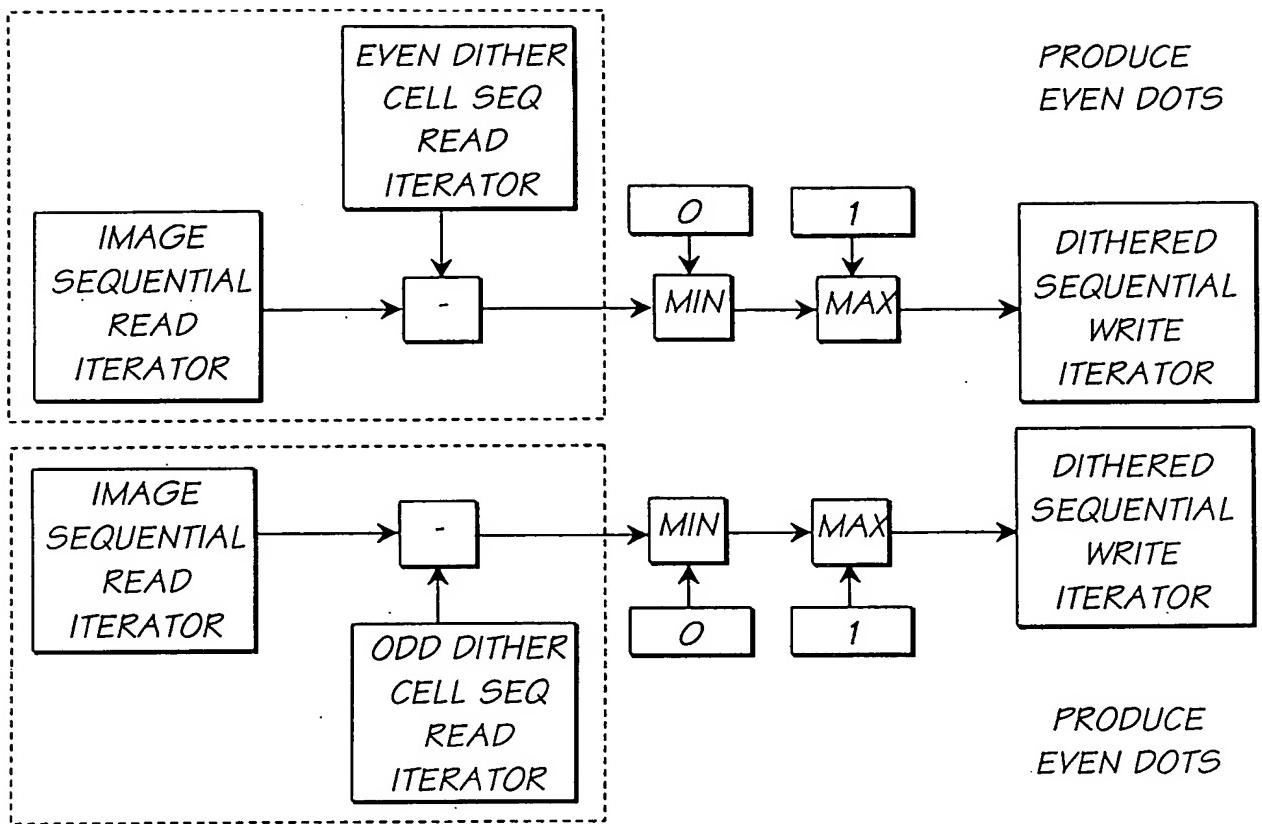


FIG. 157

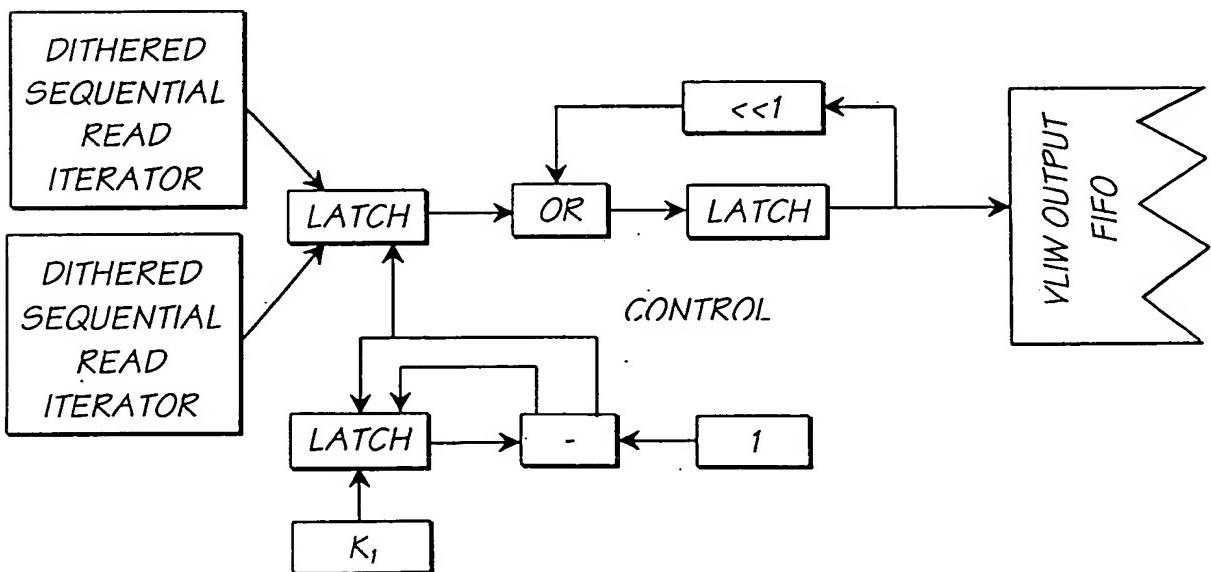


FIG. 158

FIG. 159

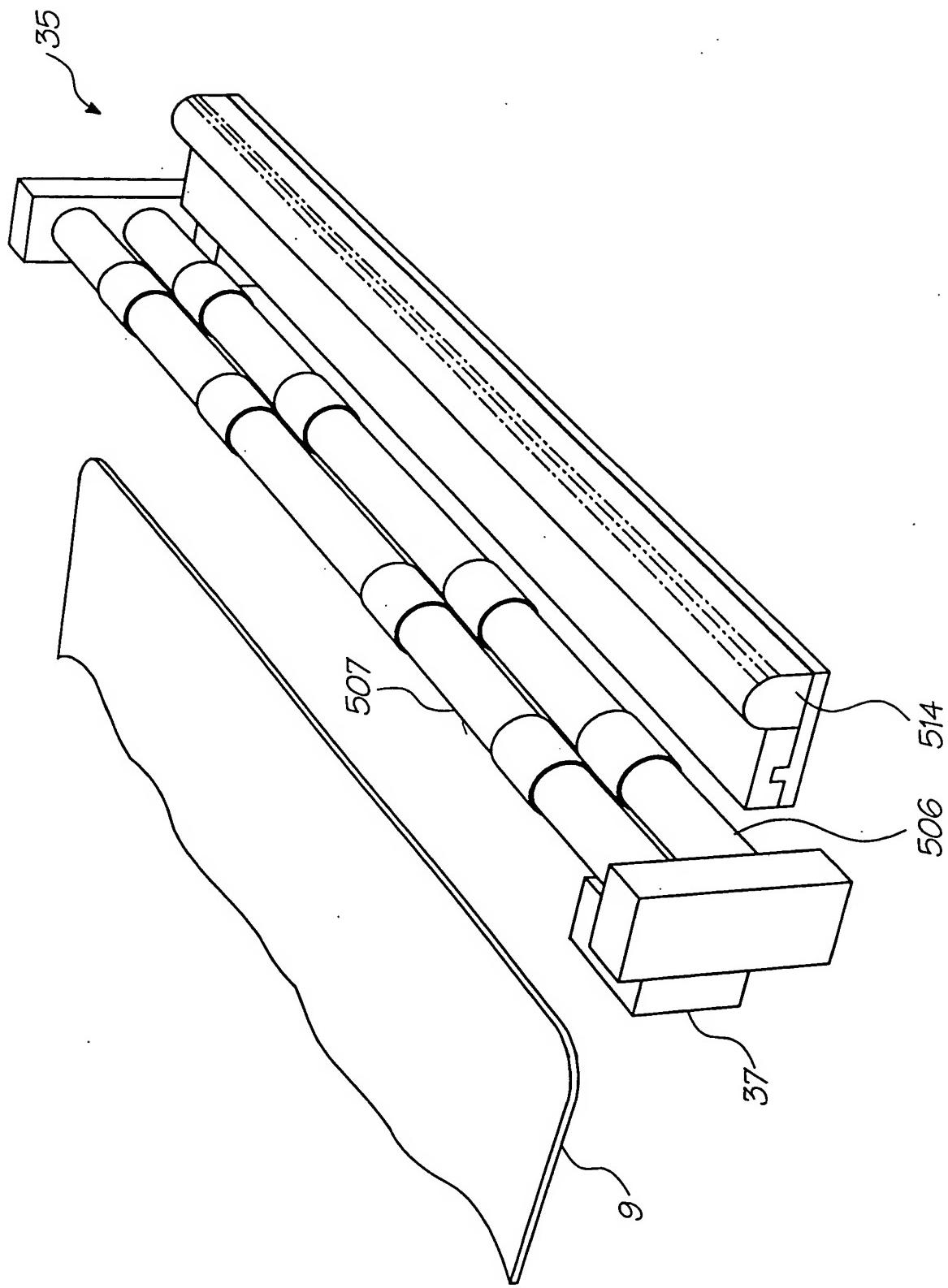


FIG. 160

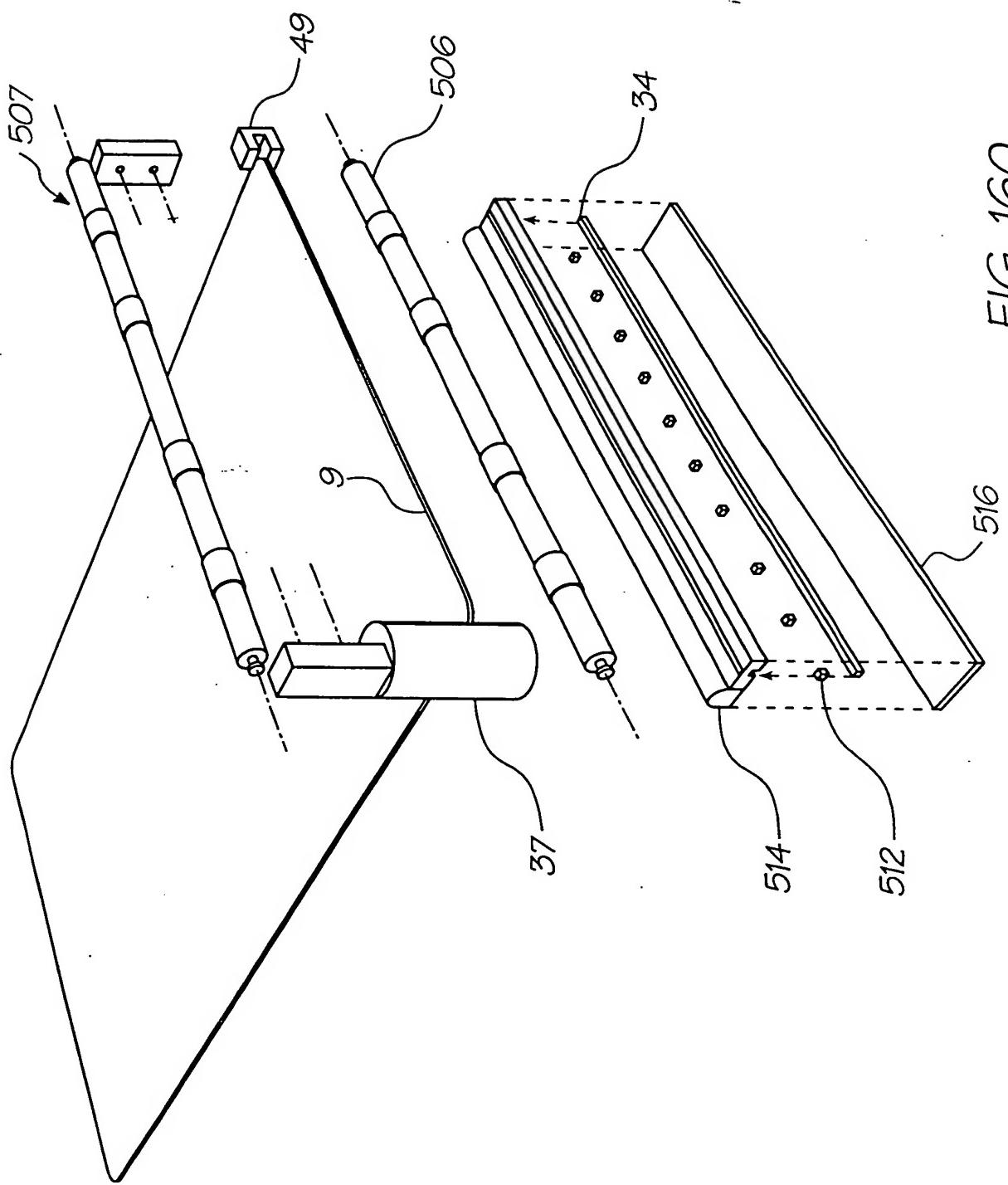
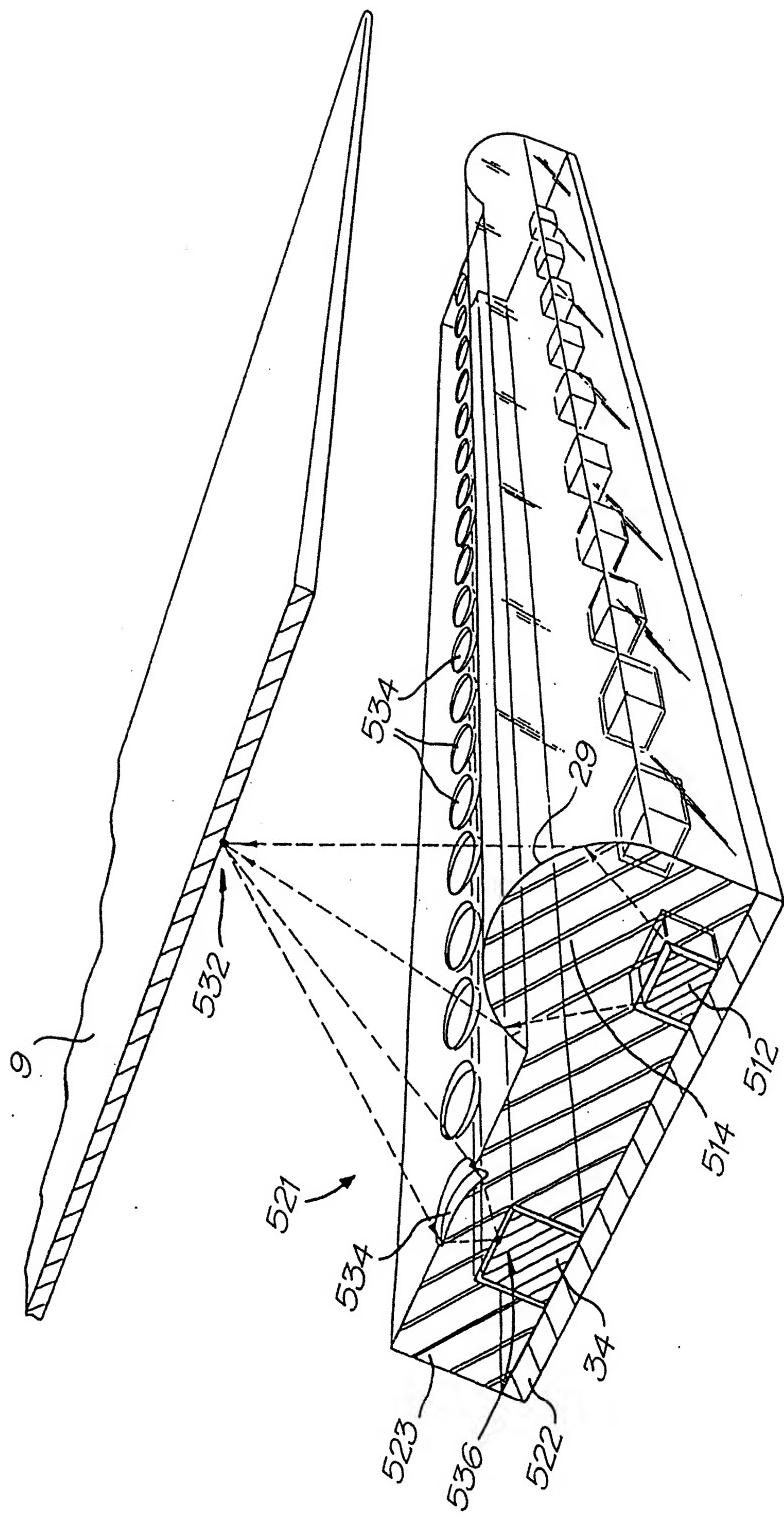


FIG. 161



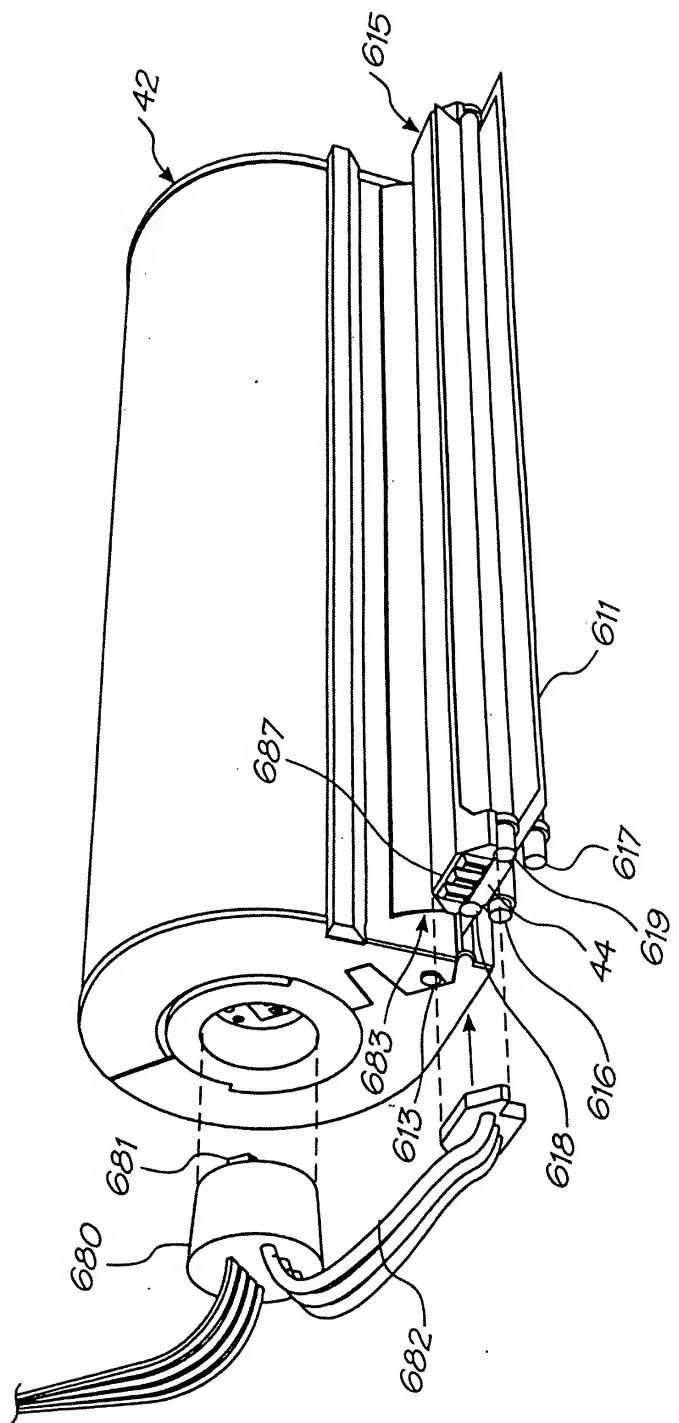


FIG. 162

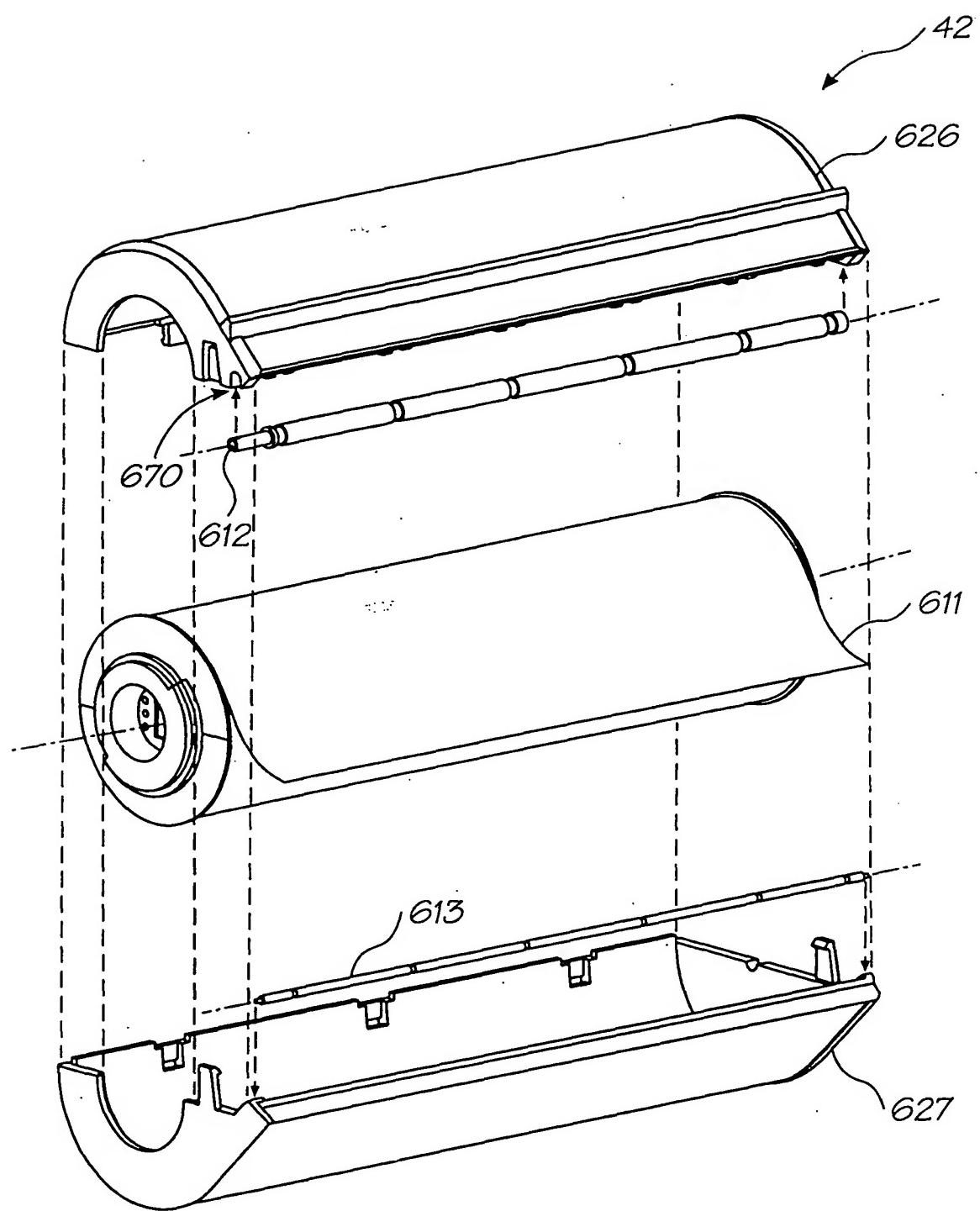


FIG. 163

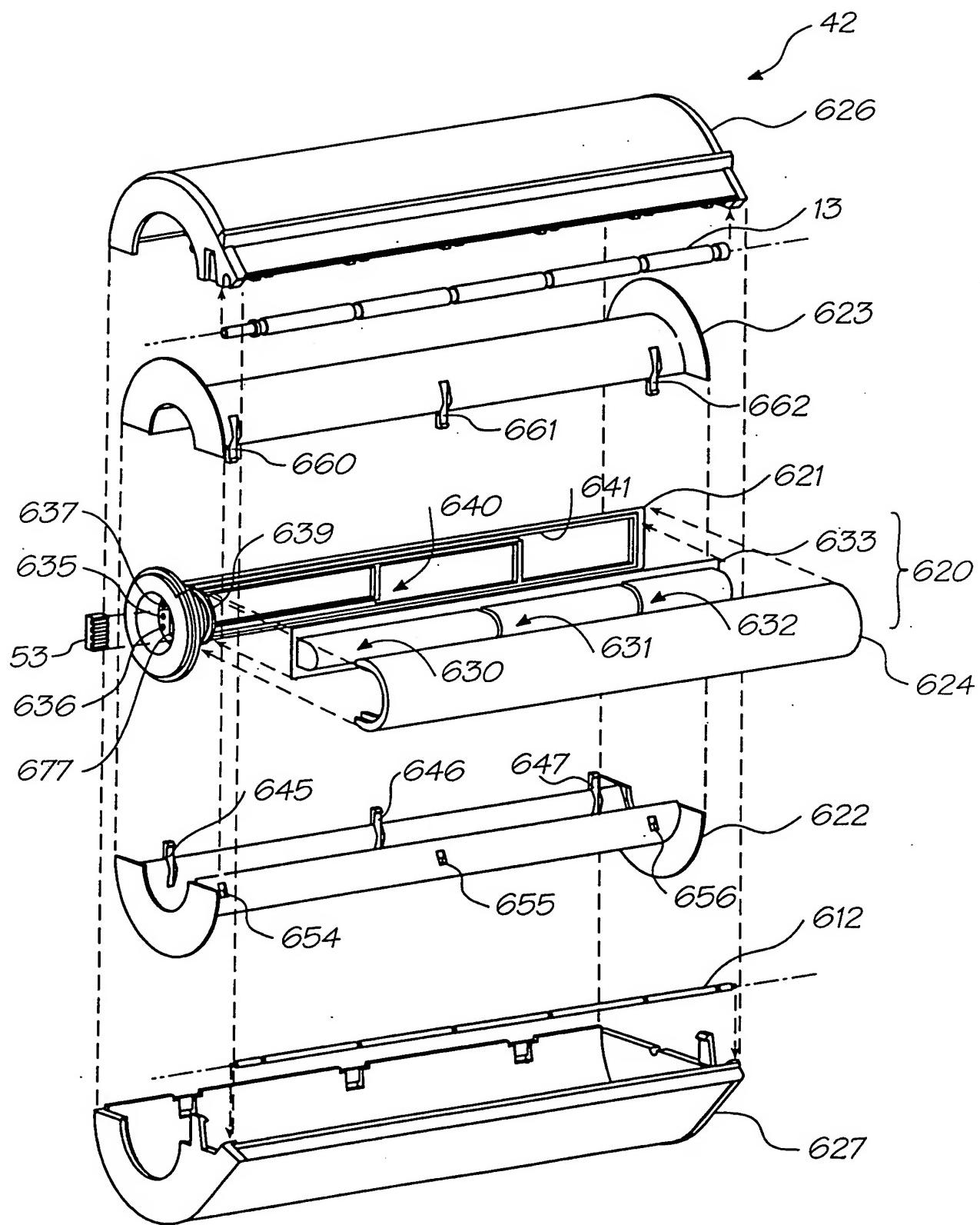


FIG. 164

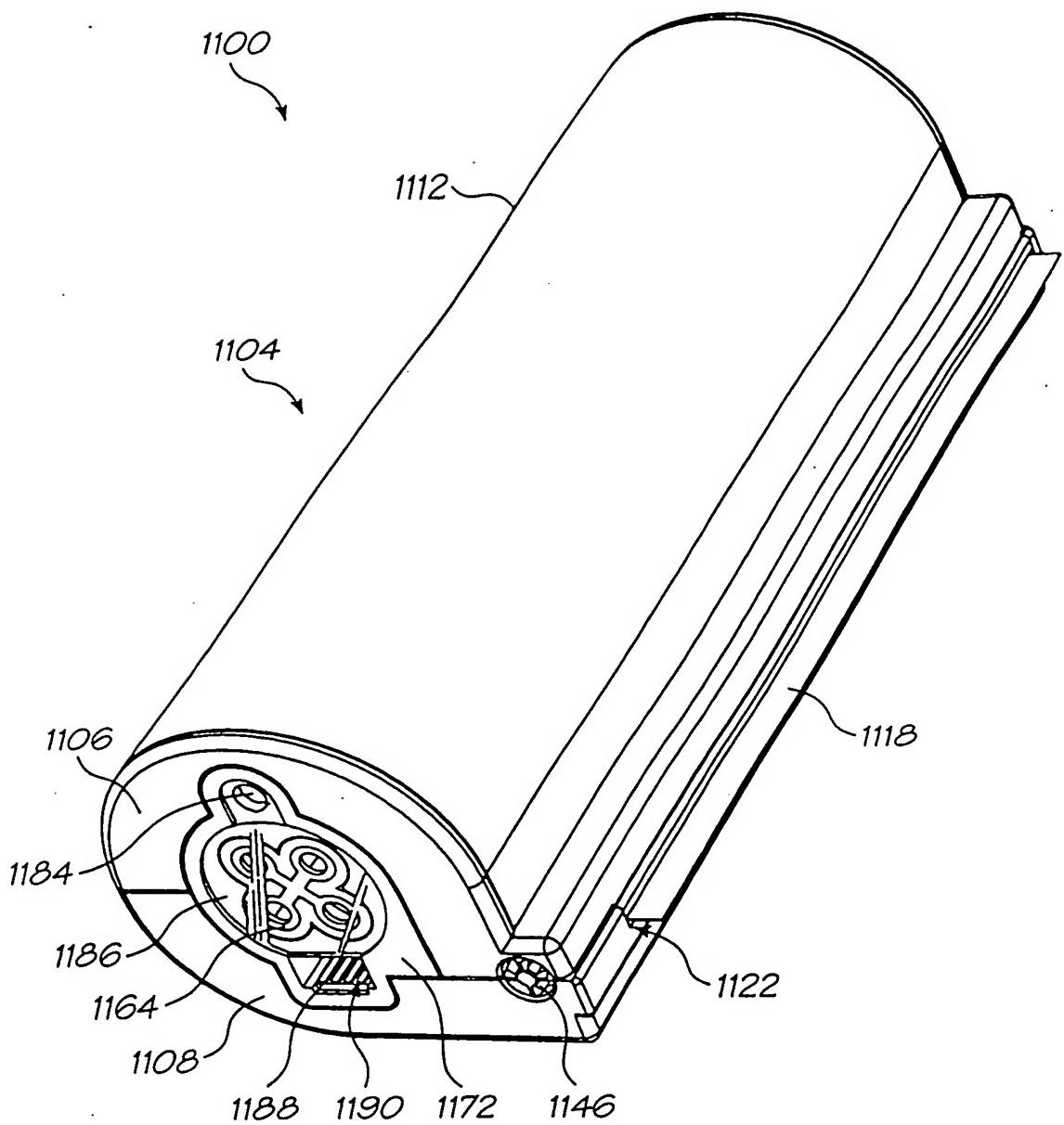
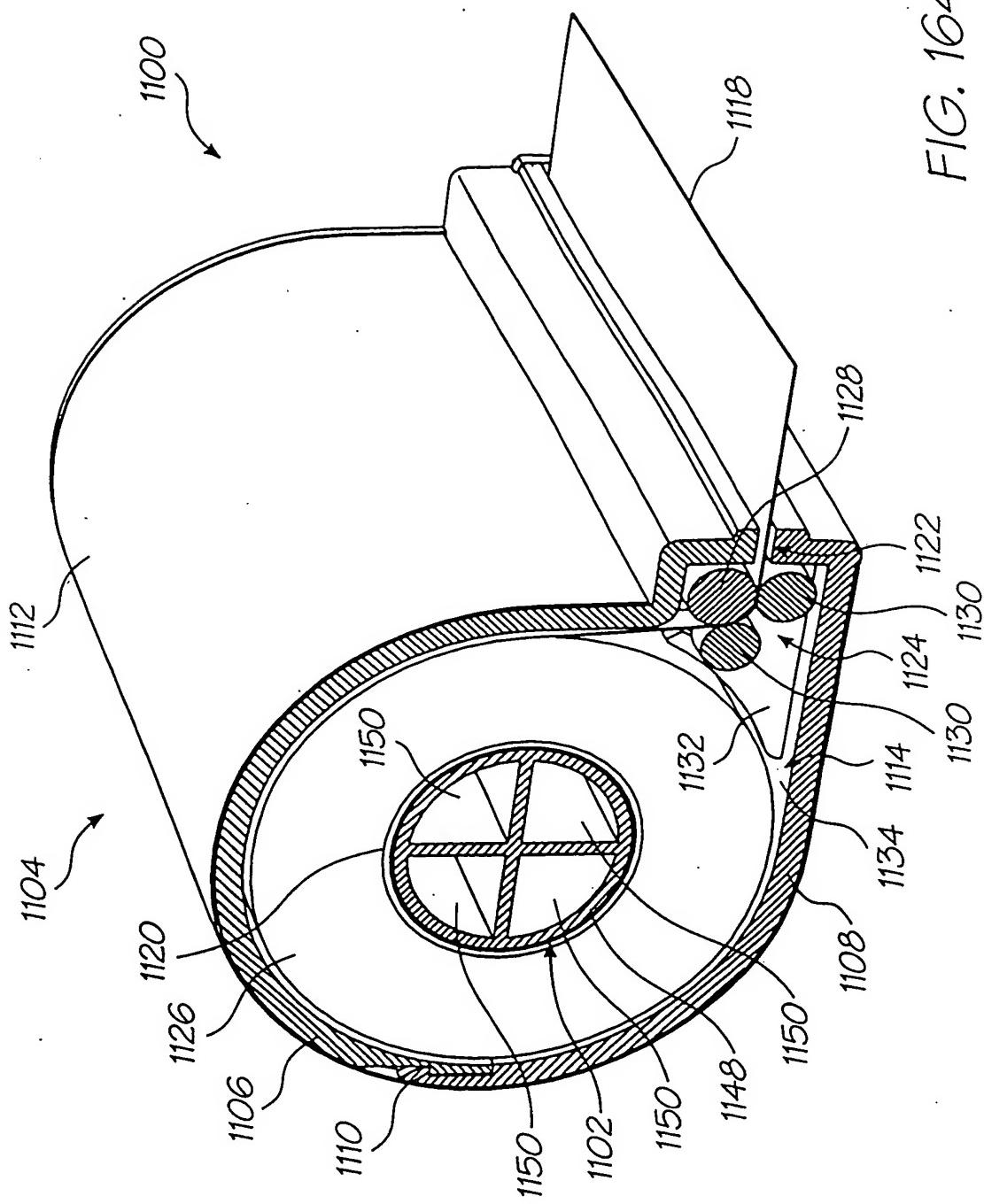


FIG. 164A

FIG. 164B



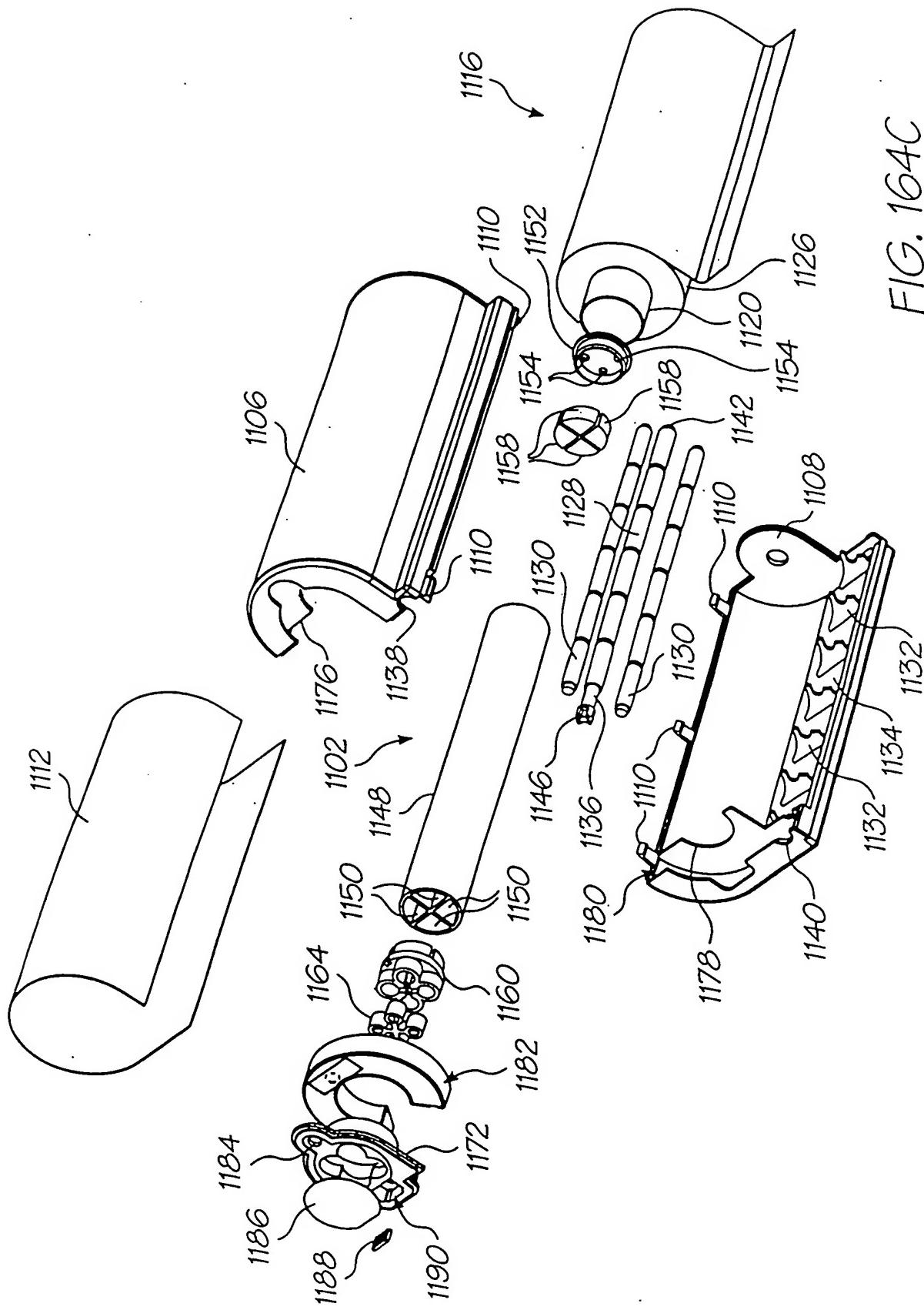


FIG. 164C

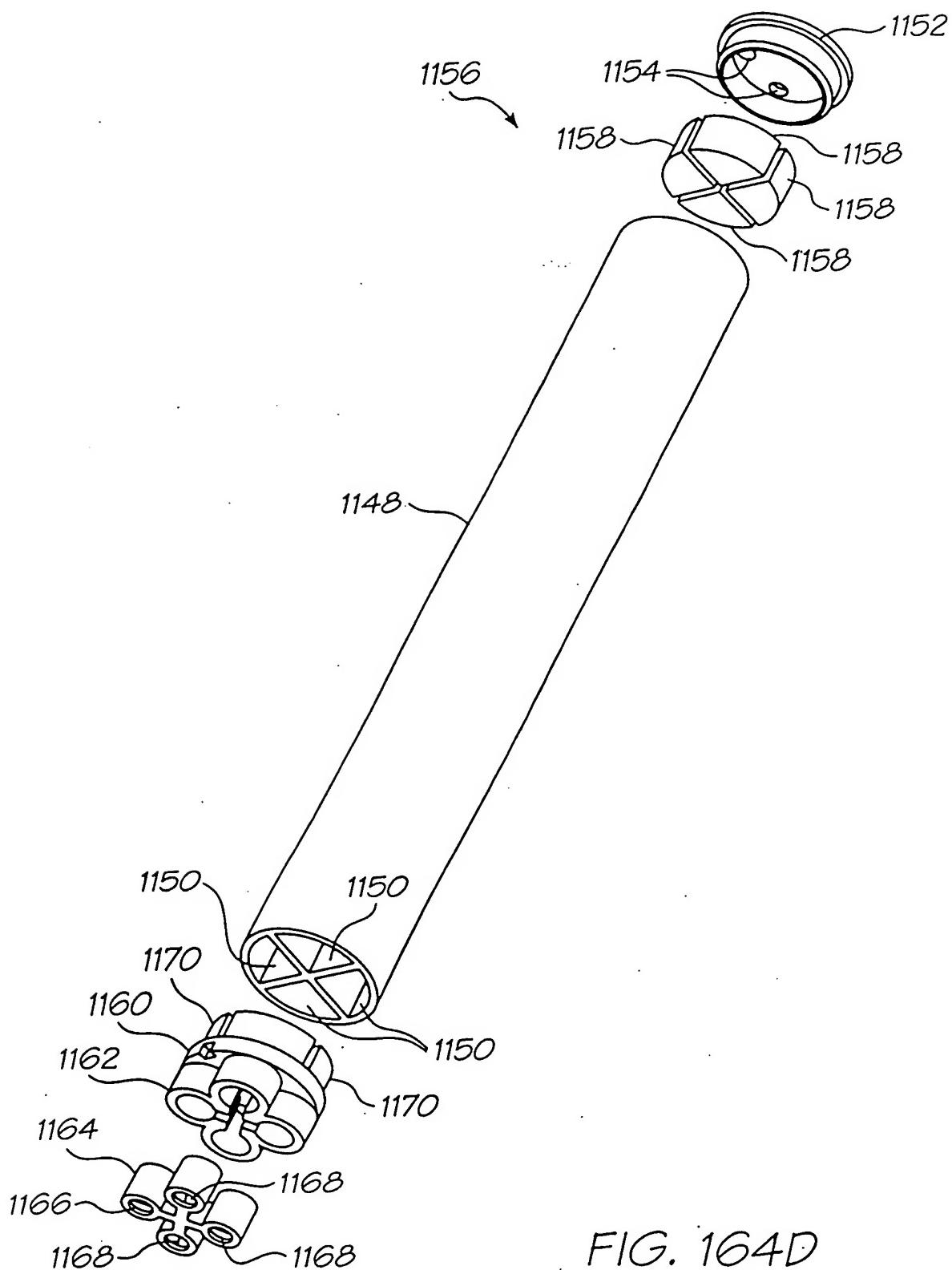


FIG. 164D

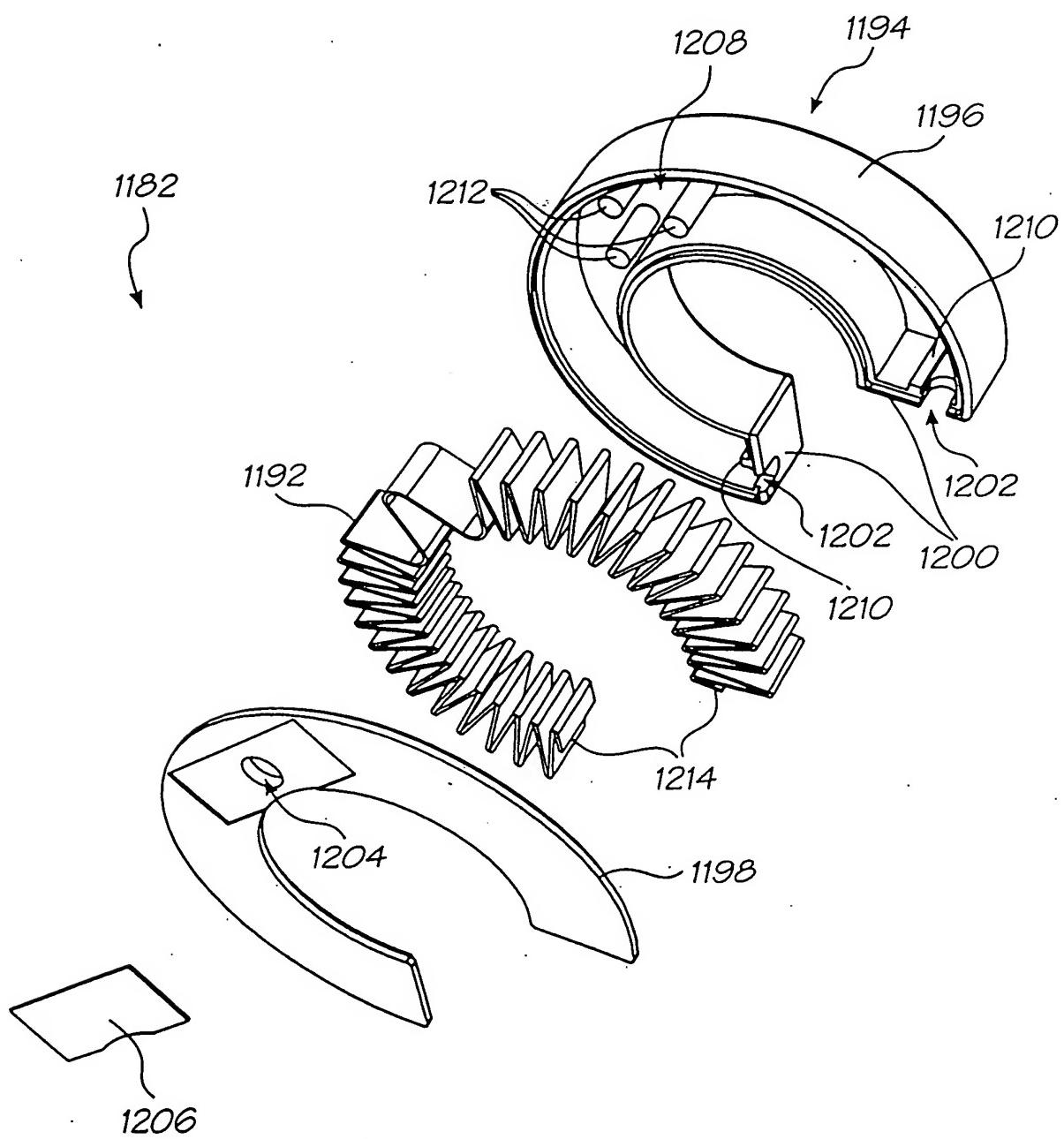
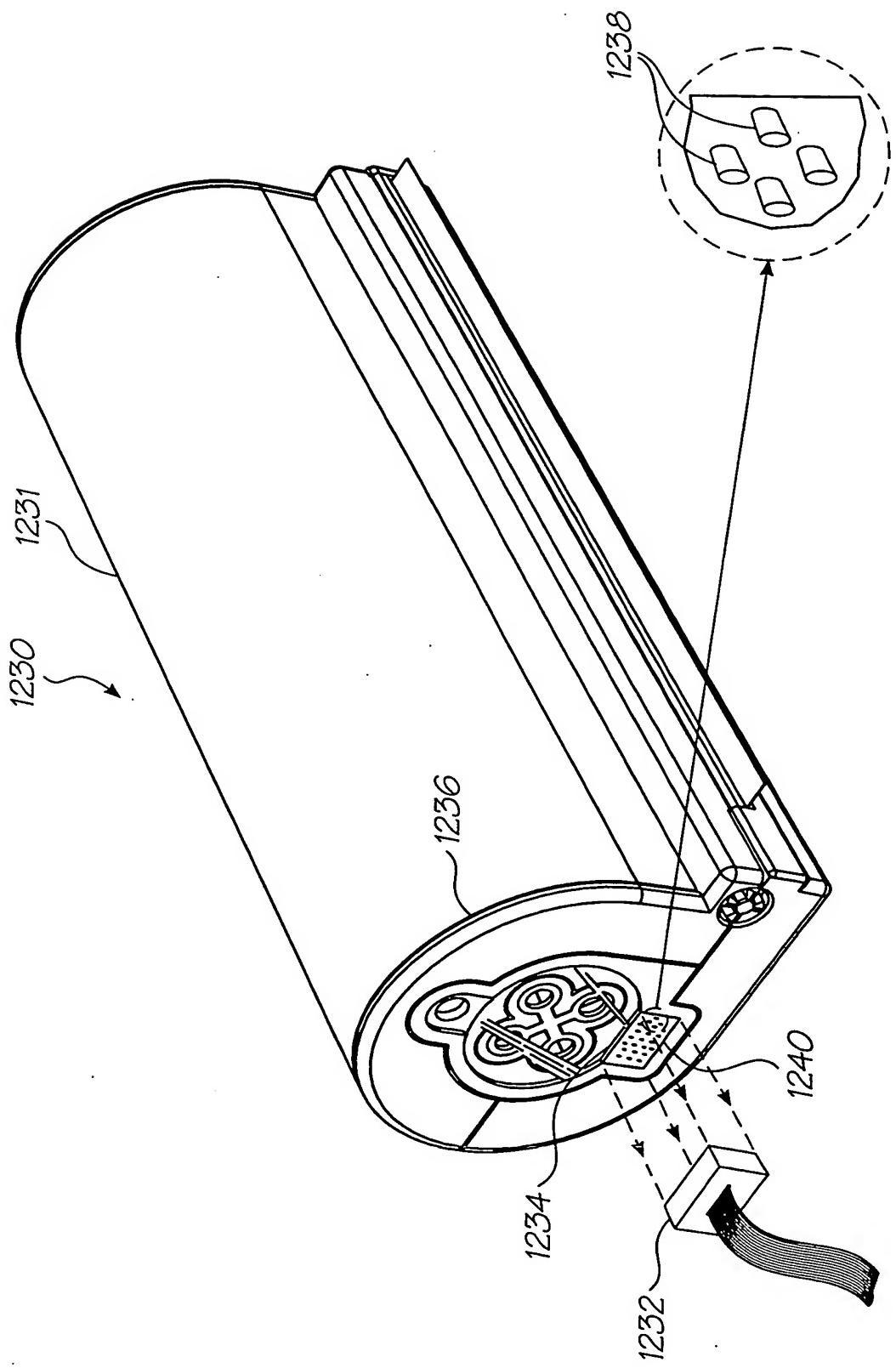


FIG. 164E

FIG. 164G

FIG. 164F



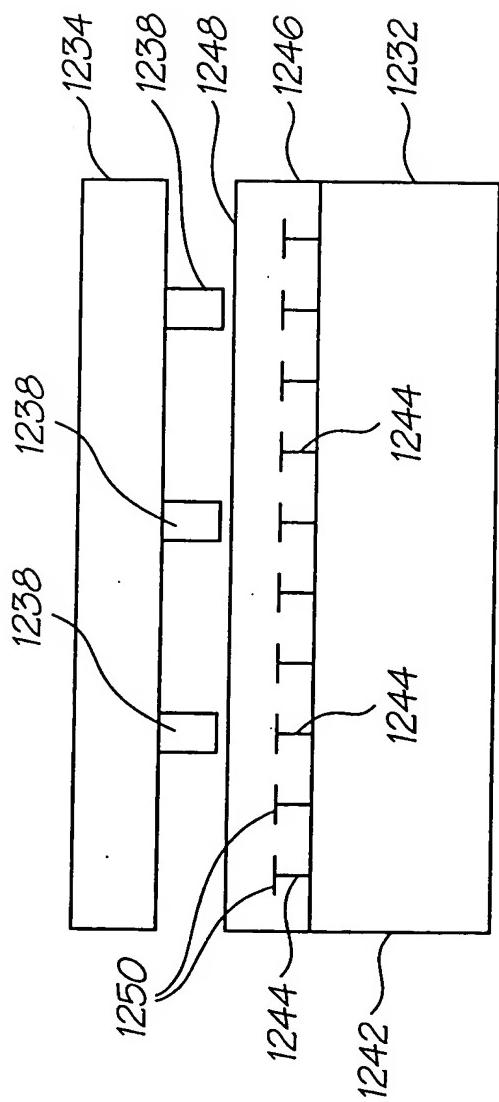
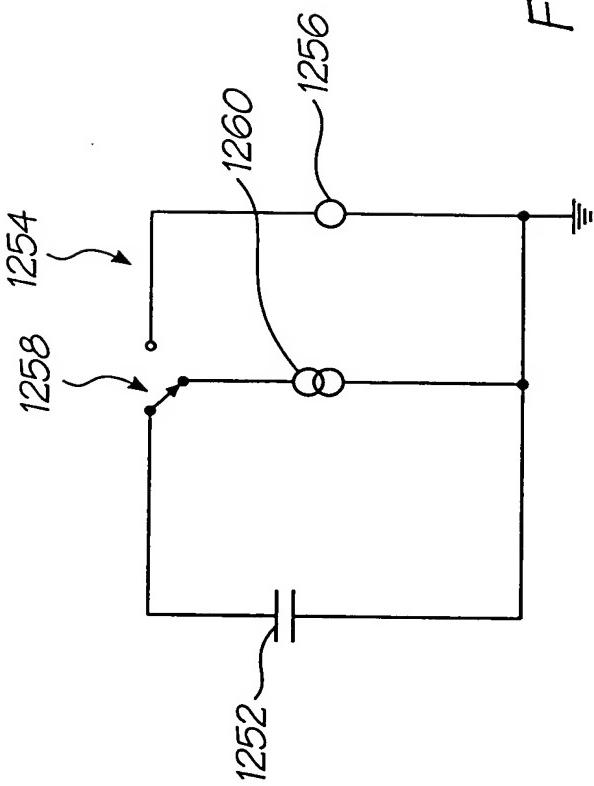


FIG. 164H



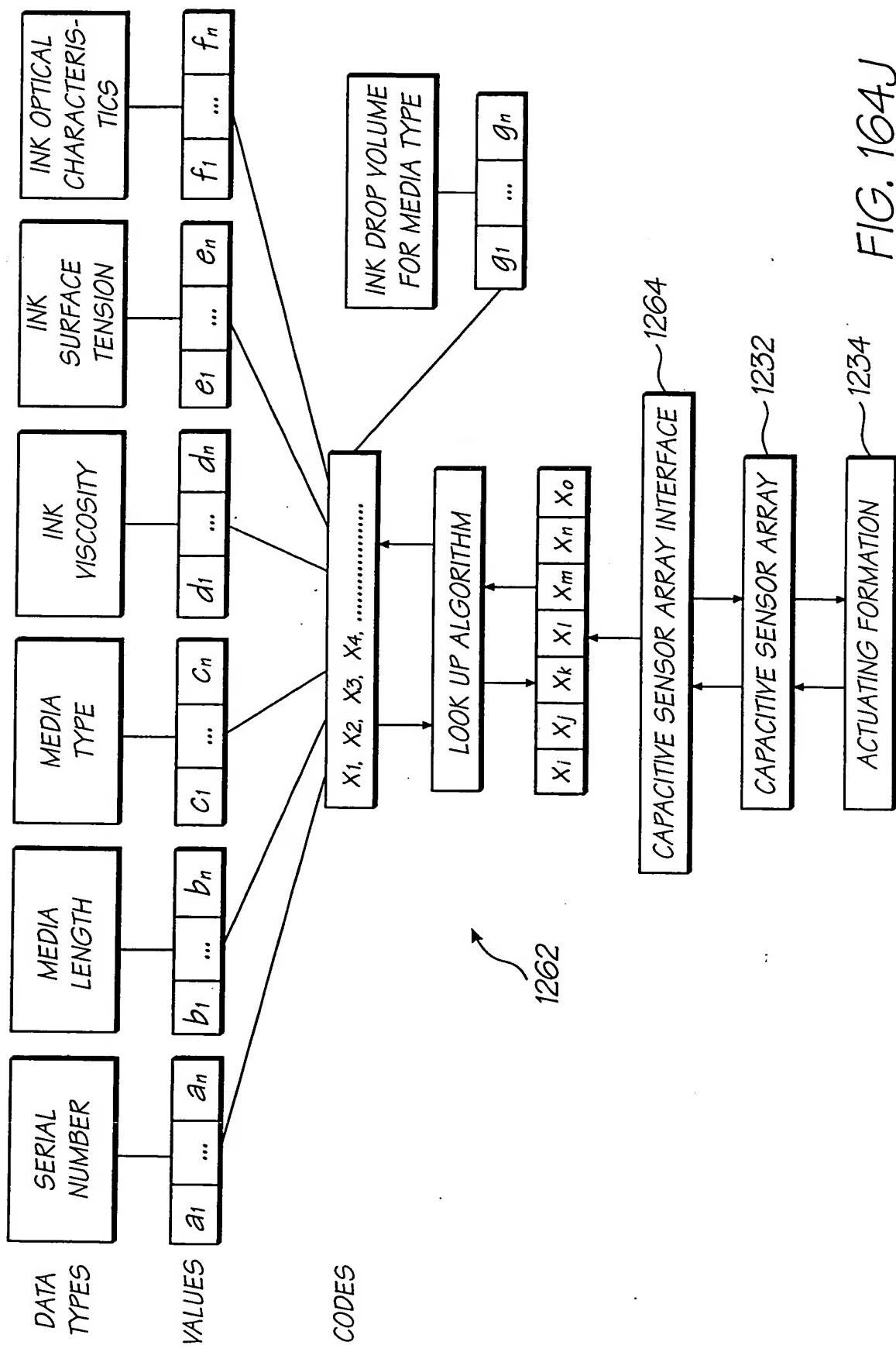


FIG. 164J

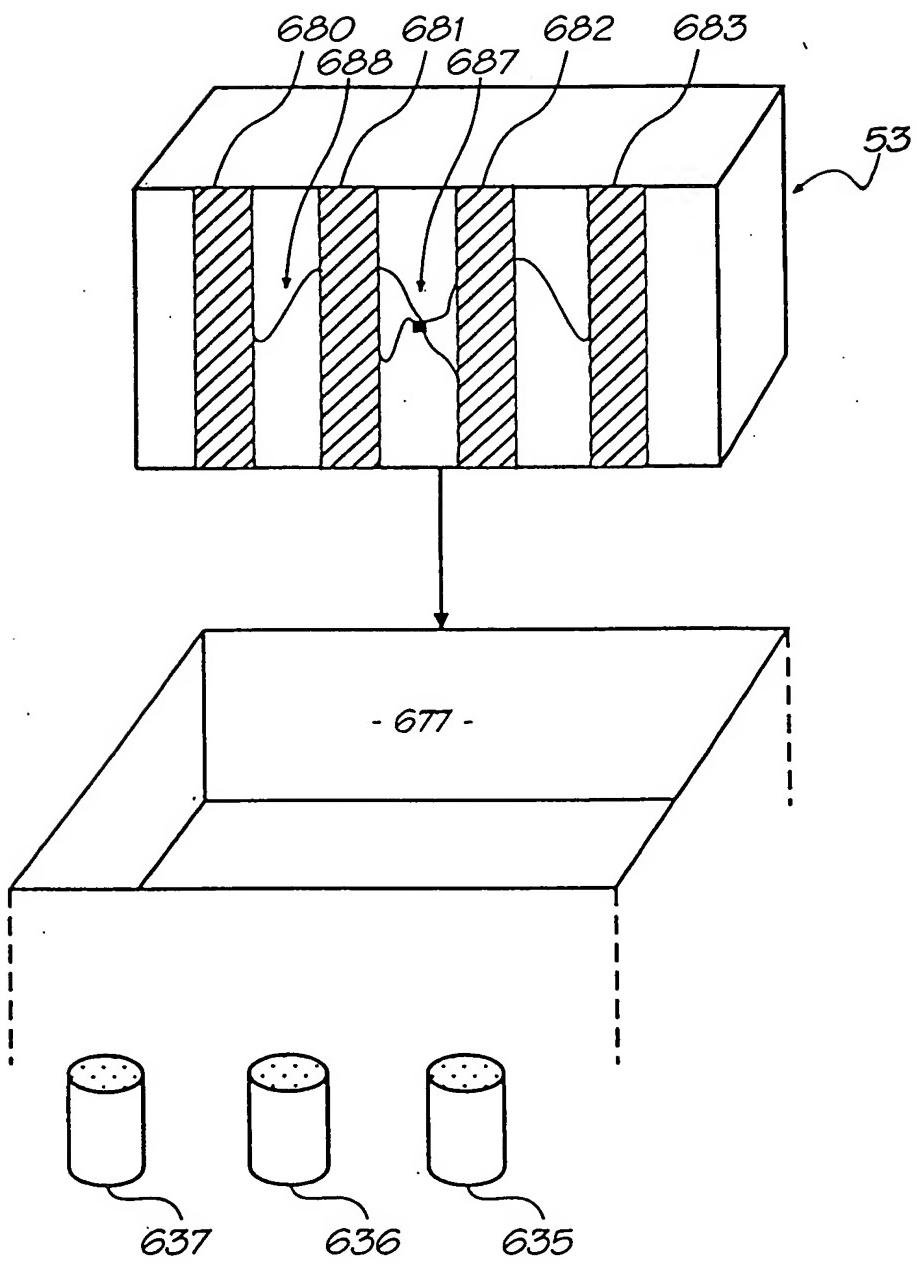


FIG. 165

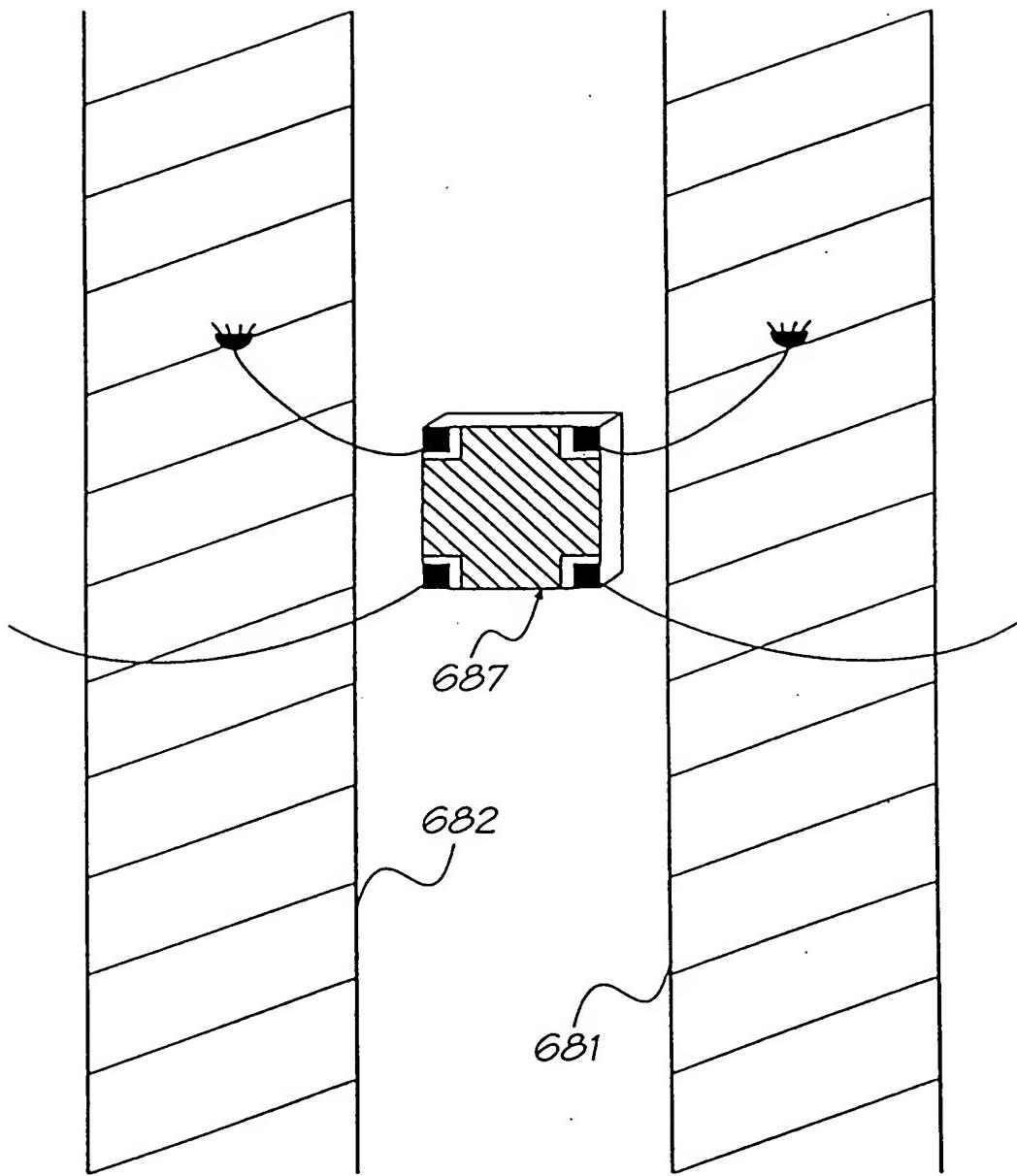


FIG. 166

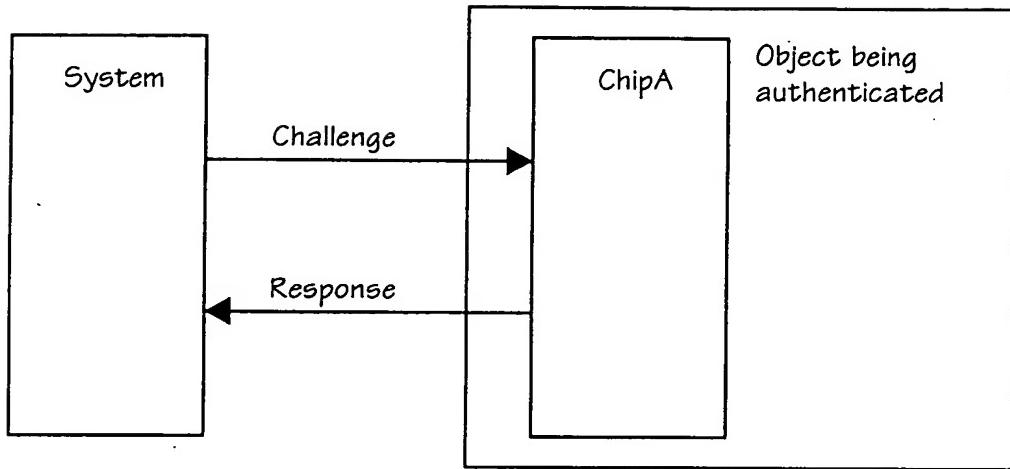


FIG. 167

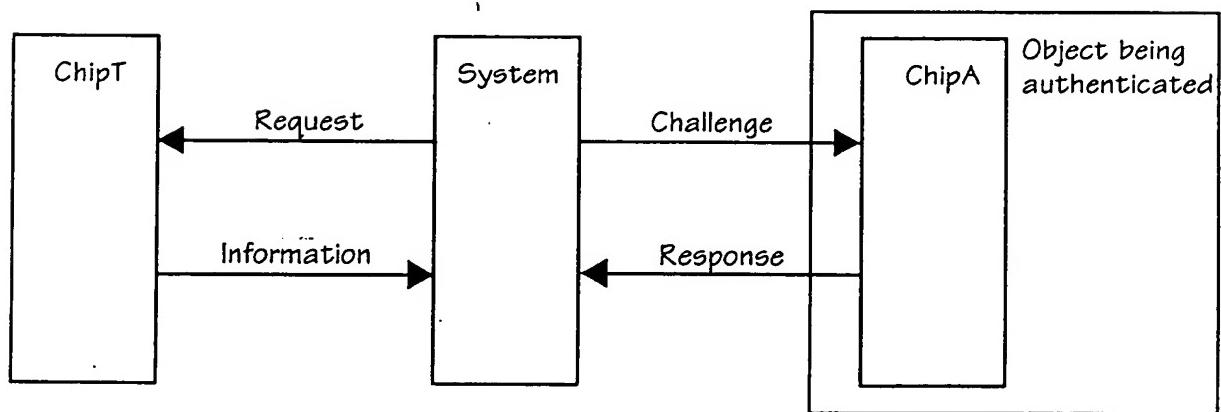


FIG. 168

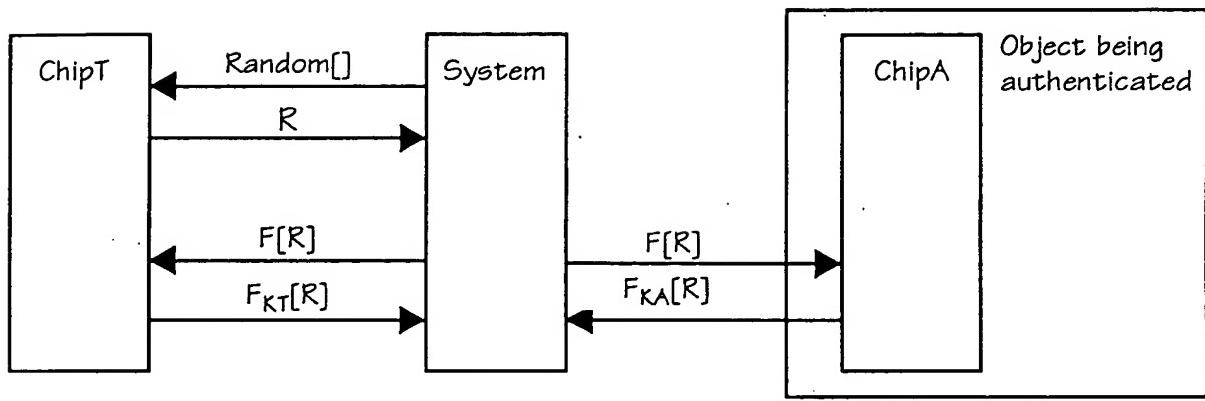


FIG. 169

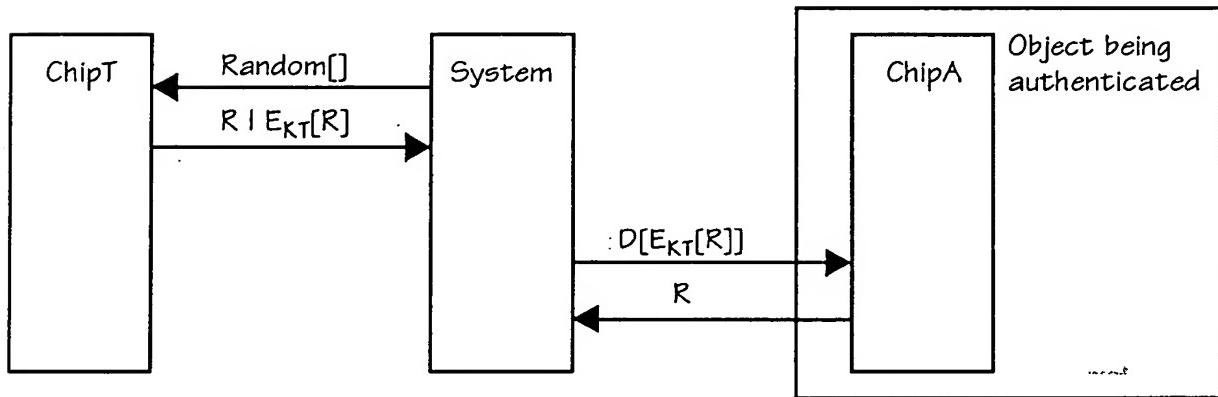


FIG. 170

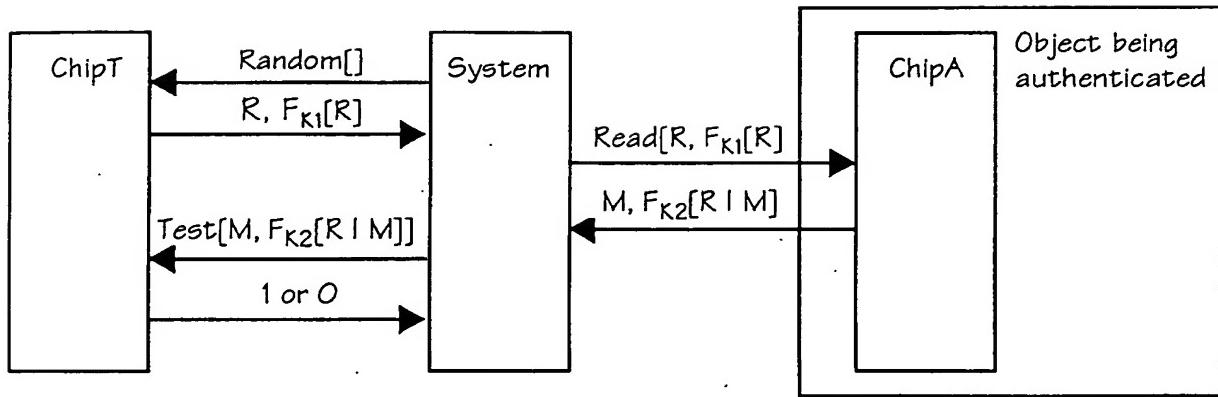


FIG. 171

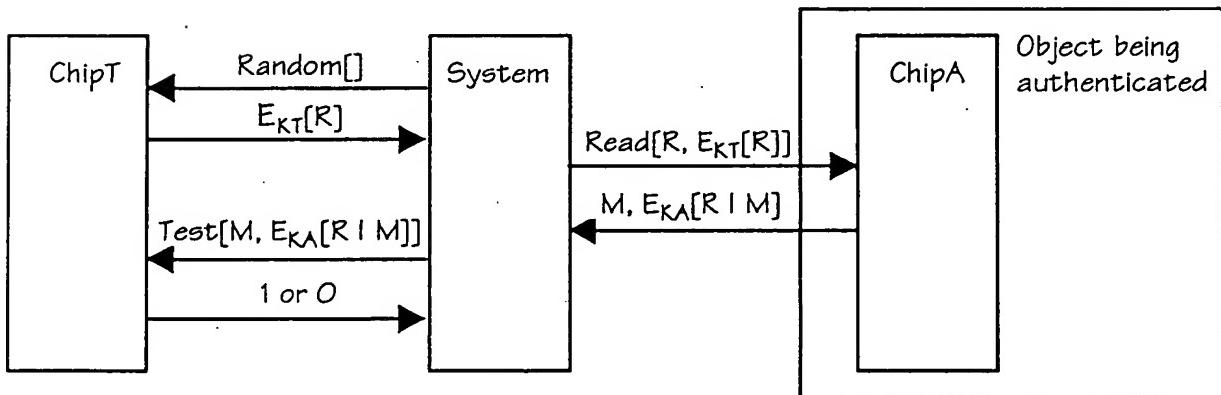


FIG. 172

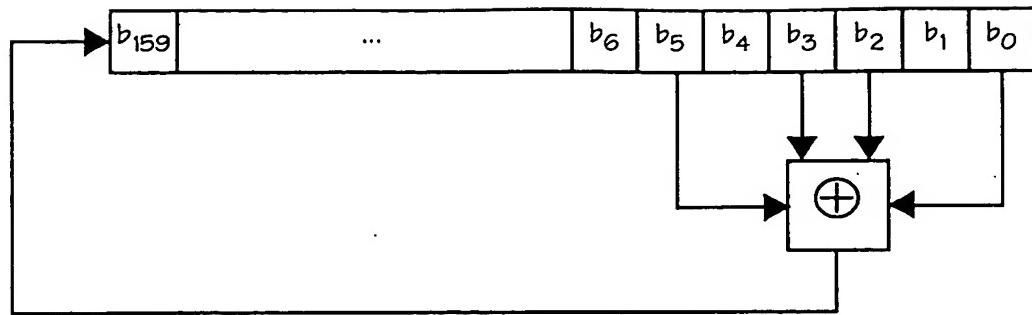


FIG. 173

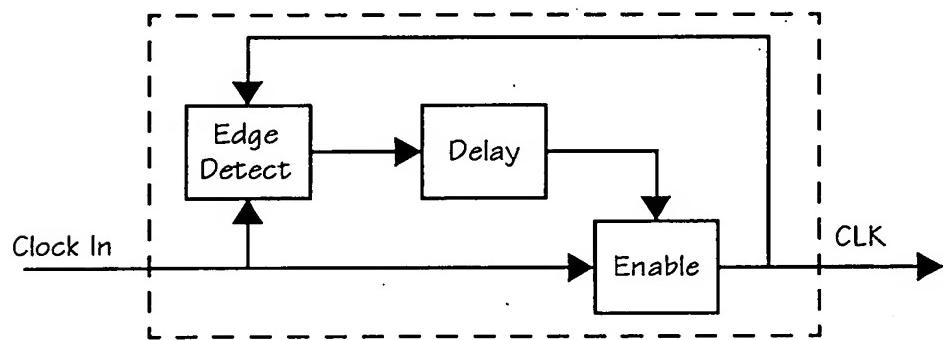


FIG. 174

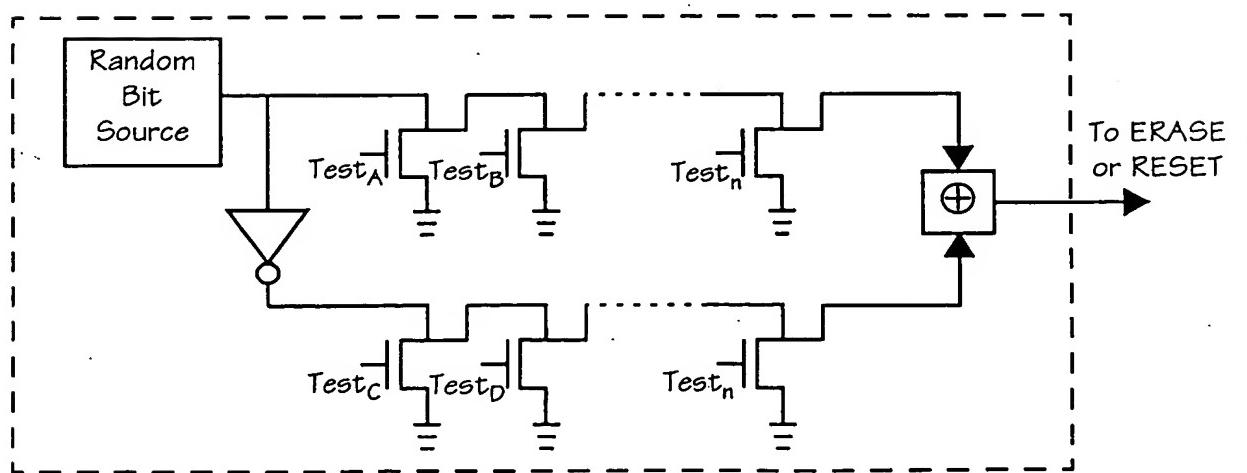


FIG. 175

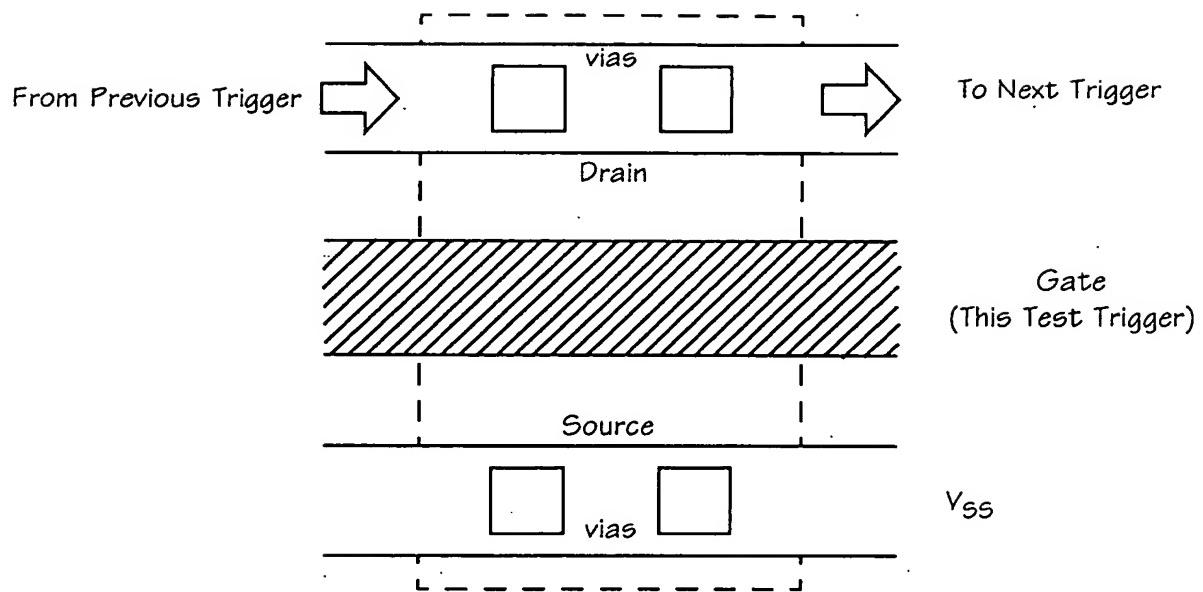


FIG. 176

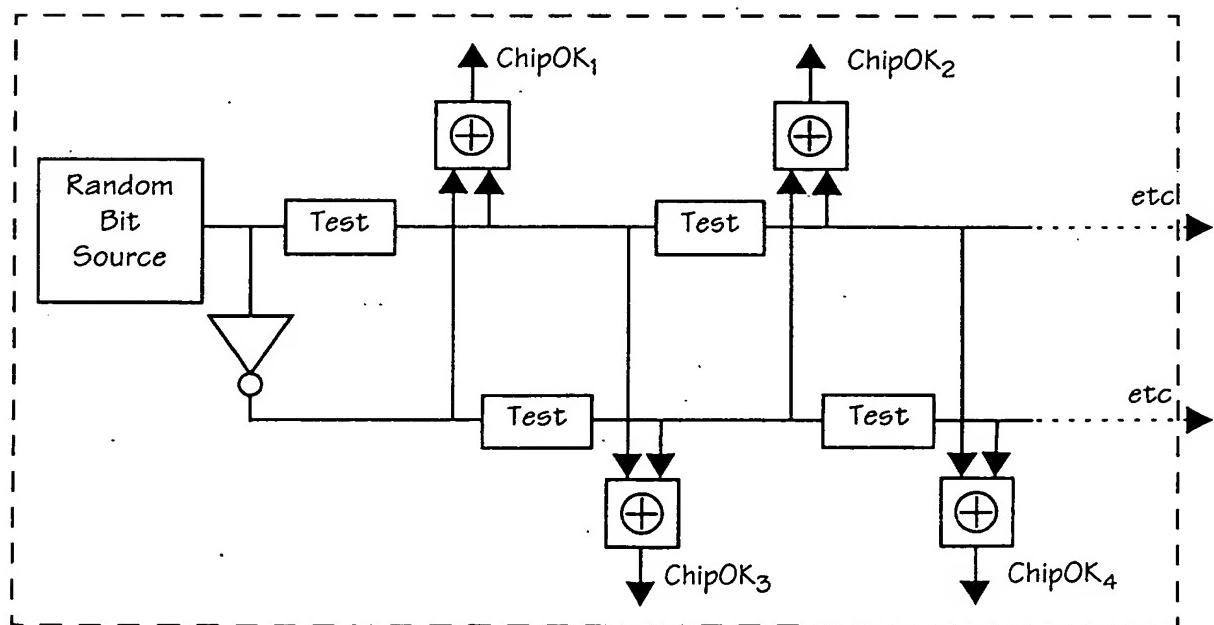
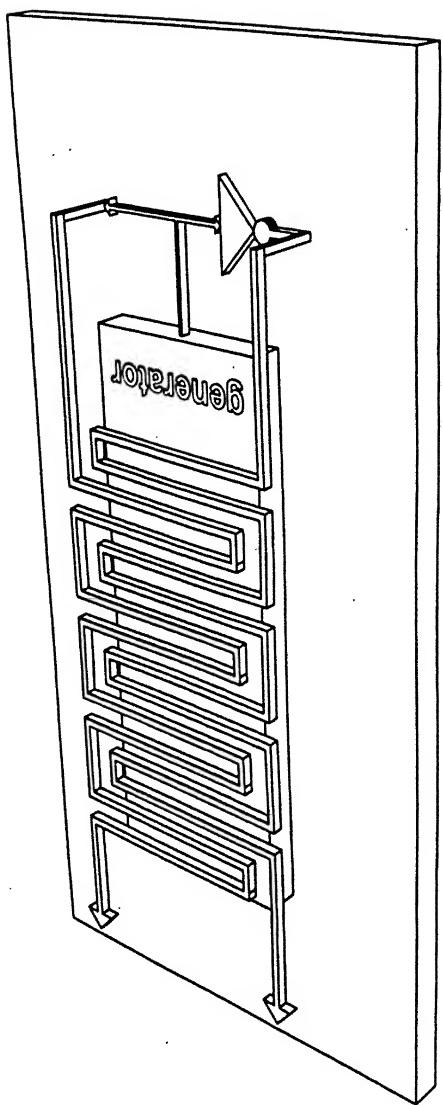


FIG. 177

FIG. 178



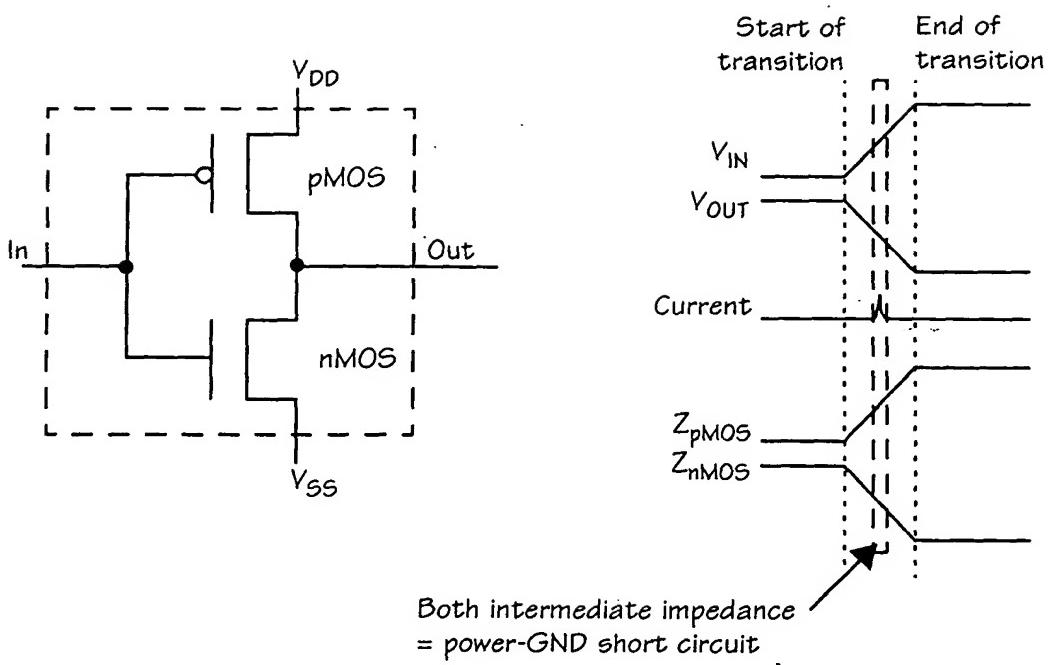


FIG. 179

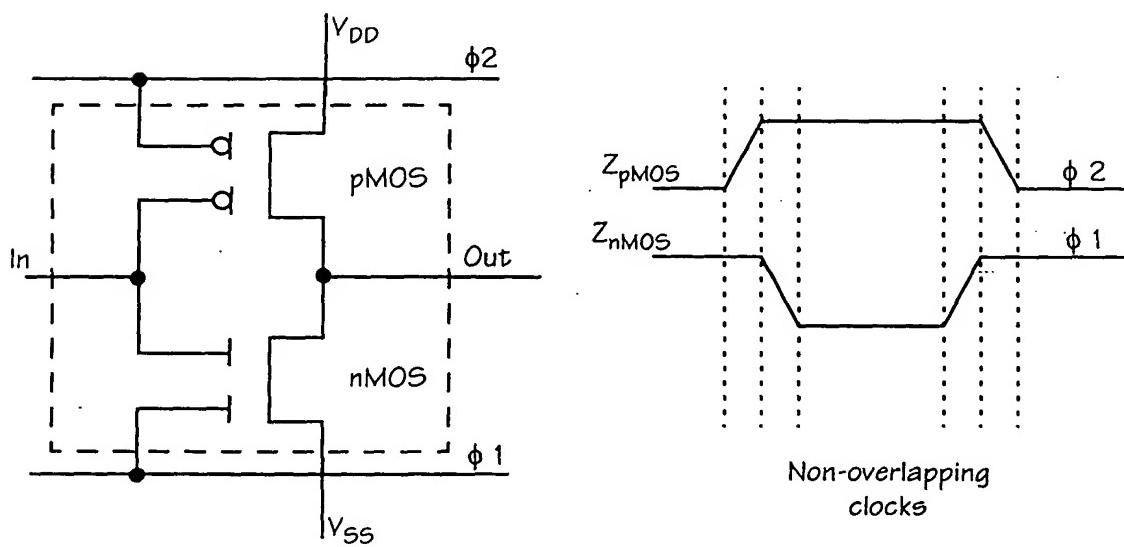


FIG. 180

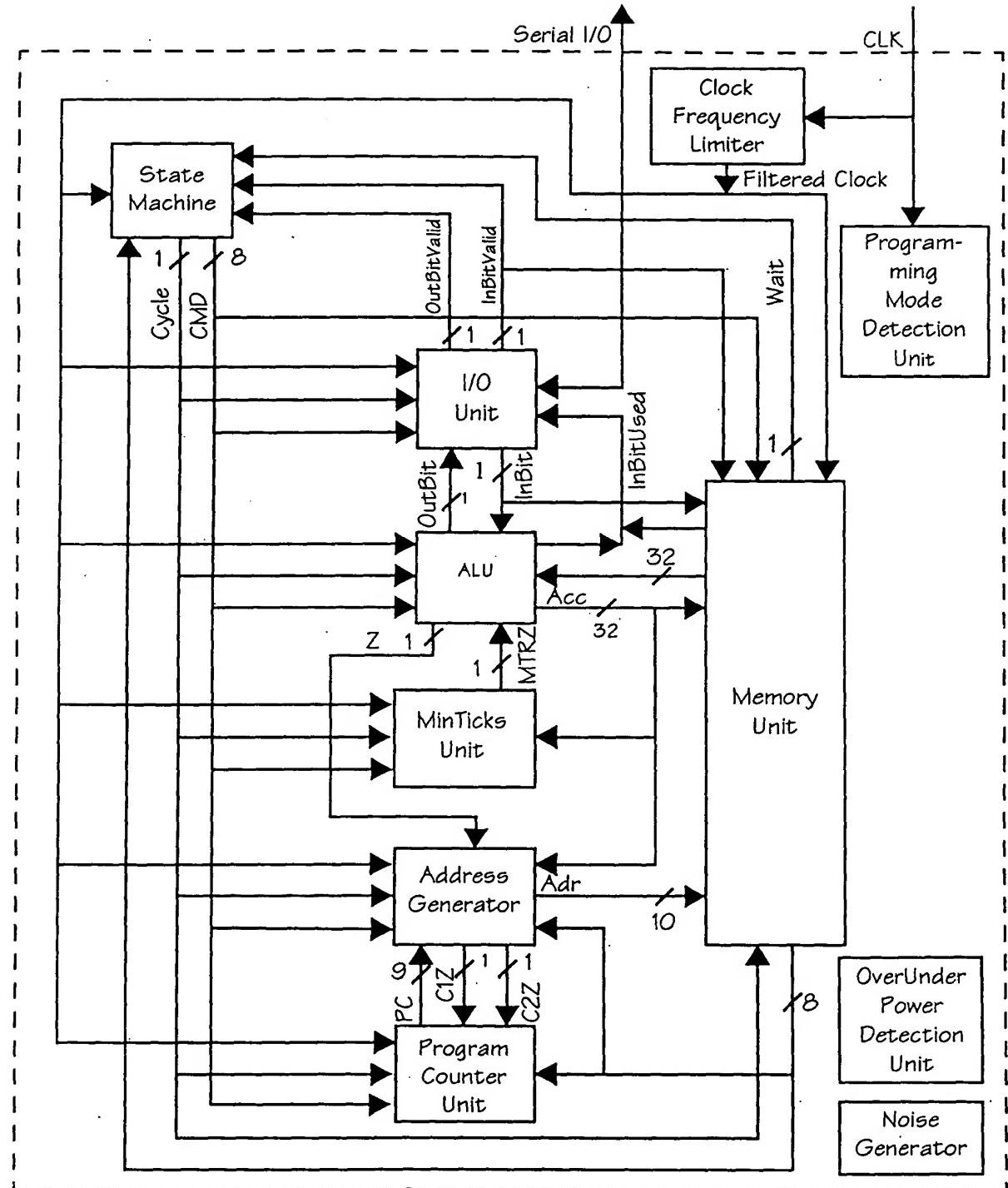


FIG. 181

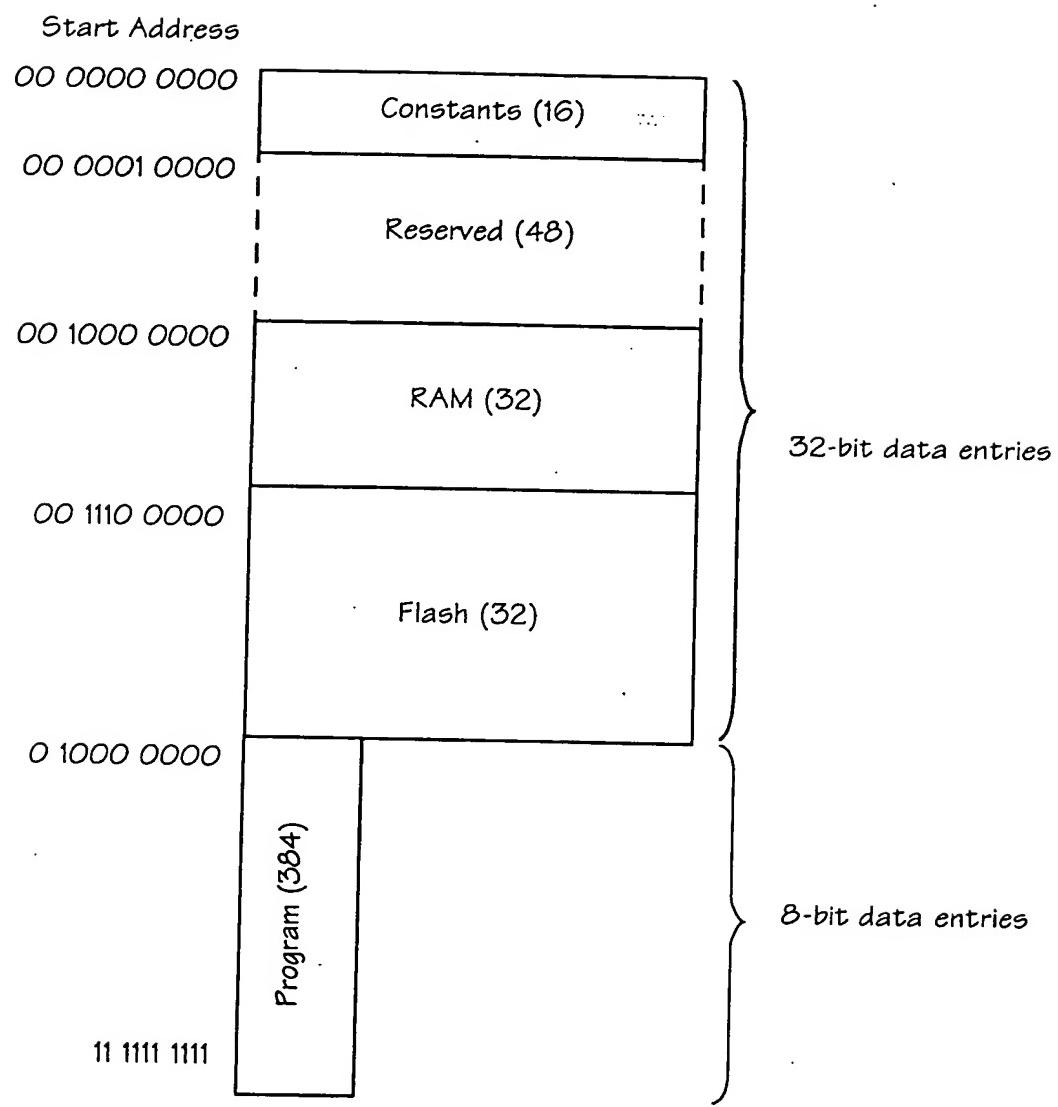


FIG. 182

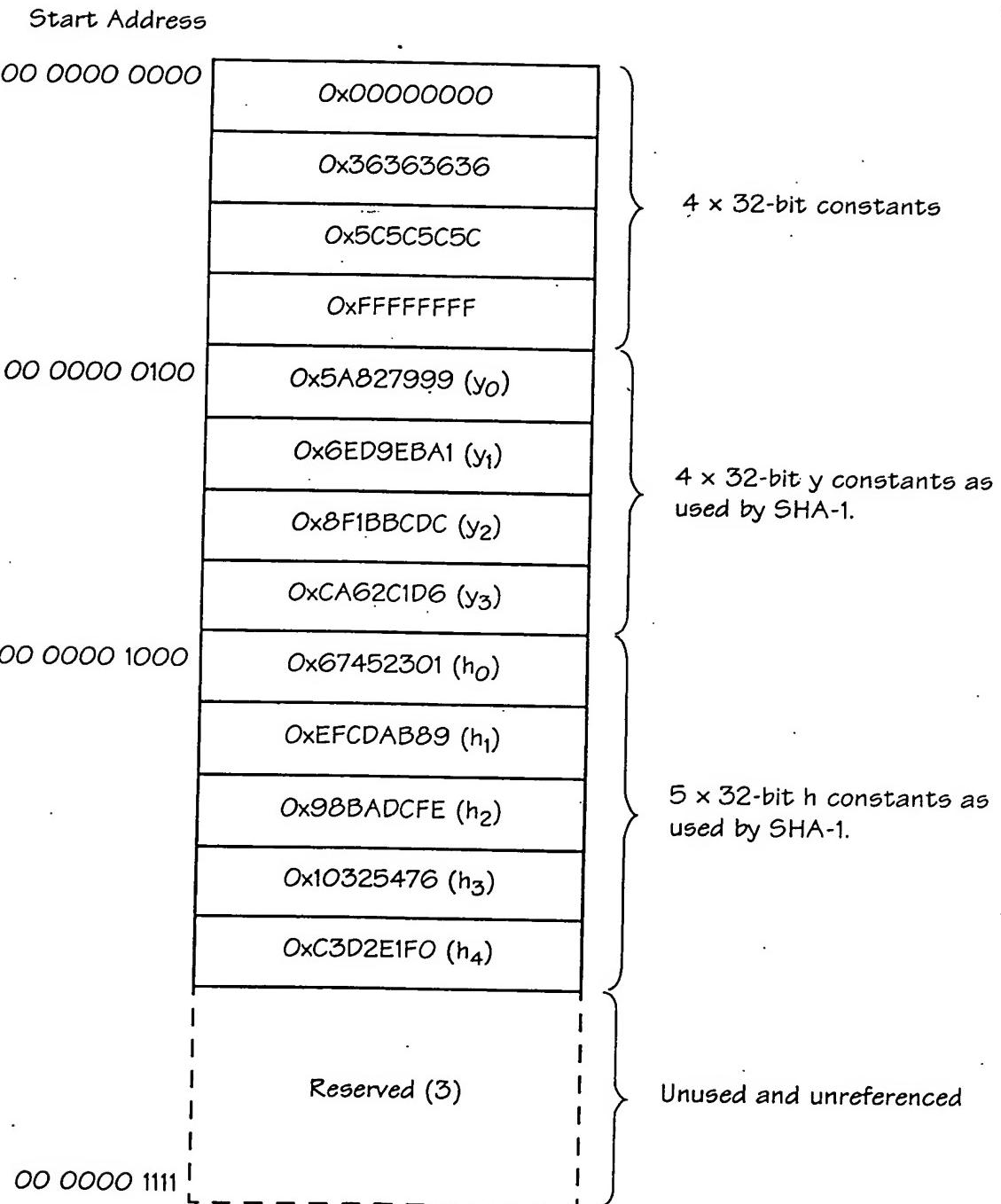


FIG. 183

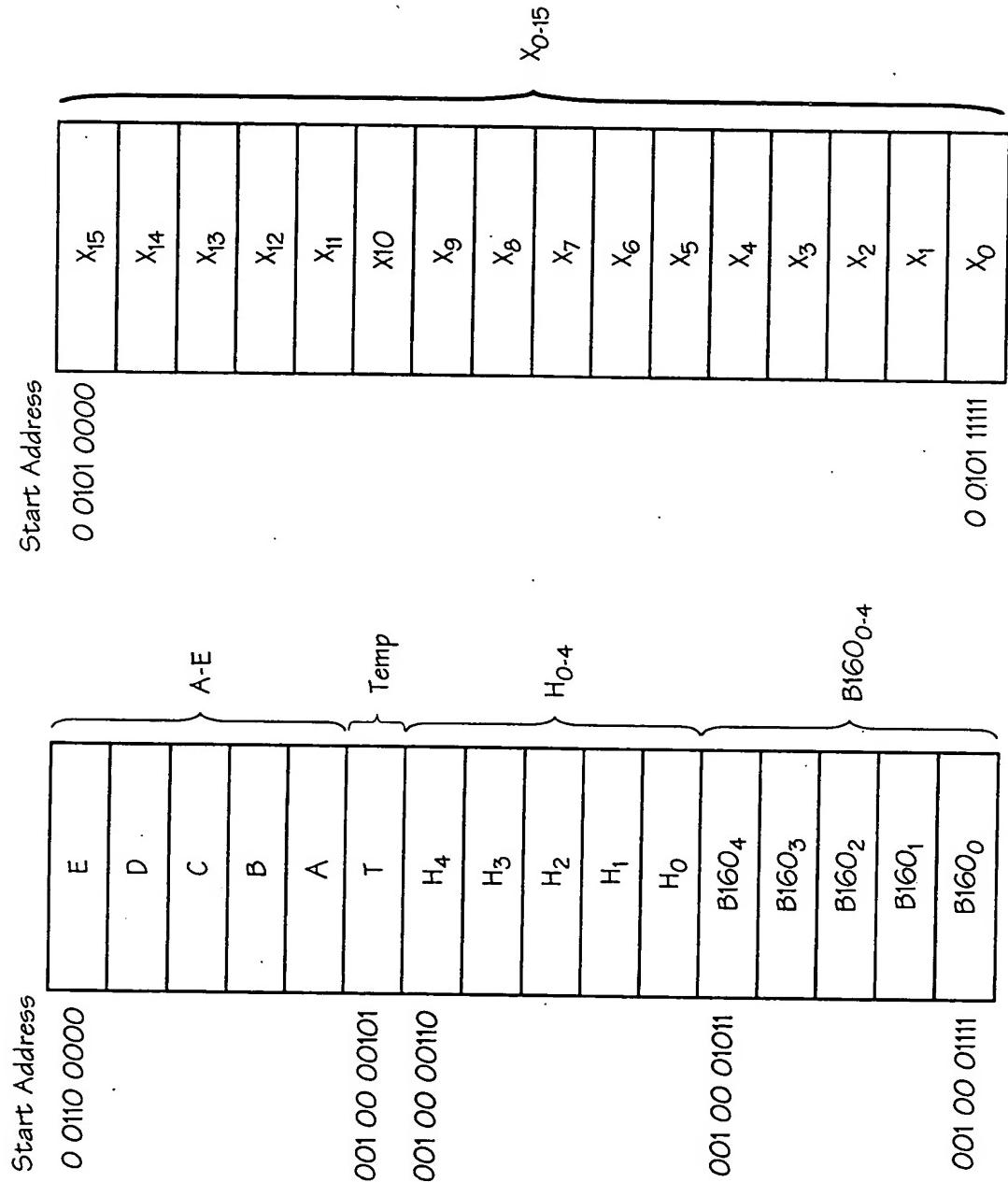


FIG. 184

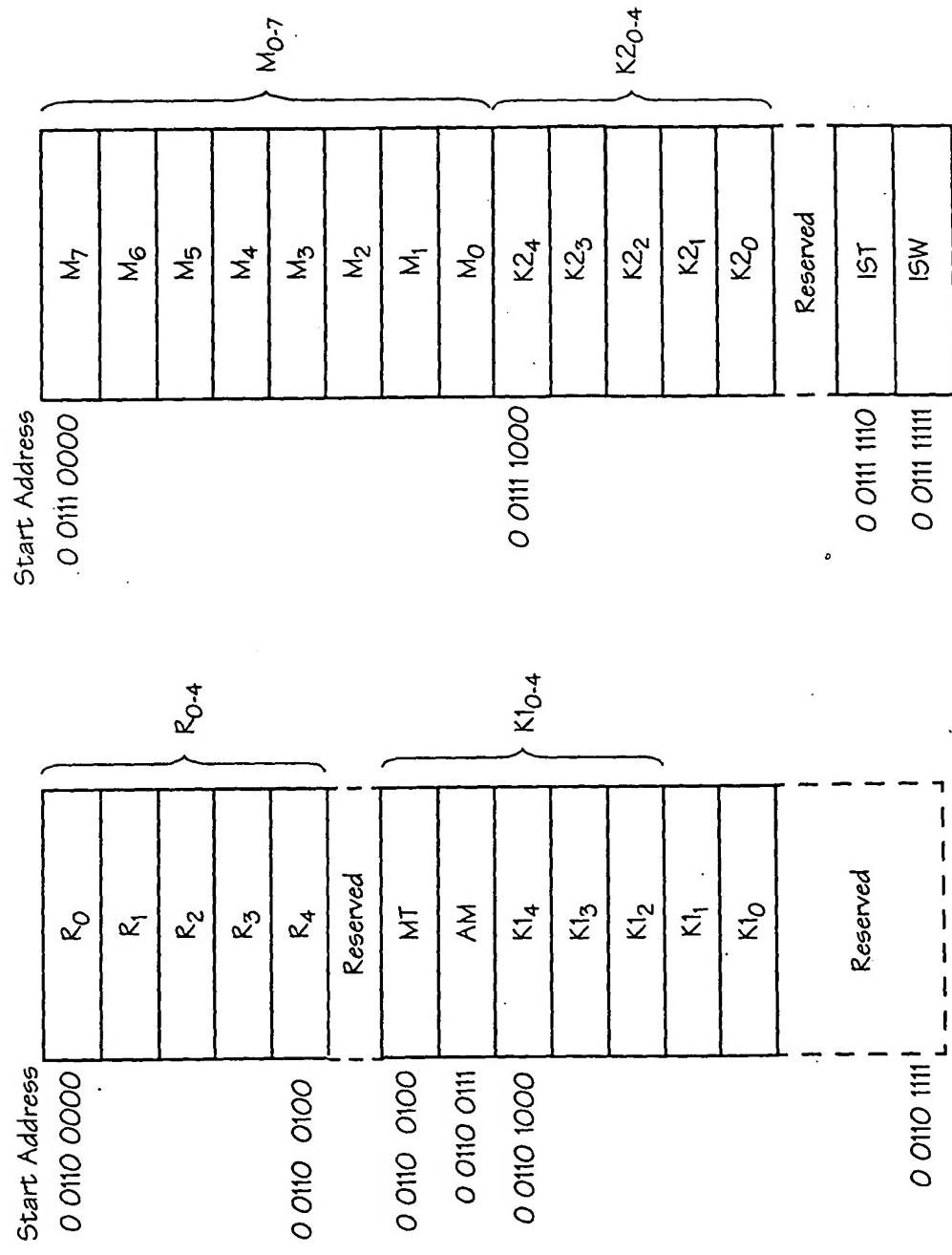


FIG. 185

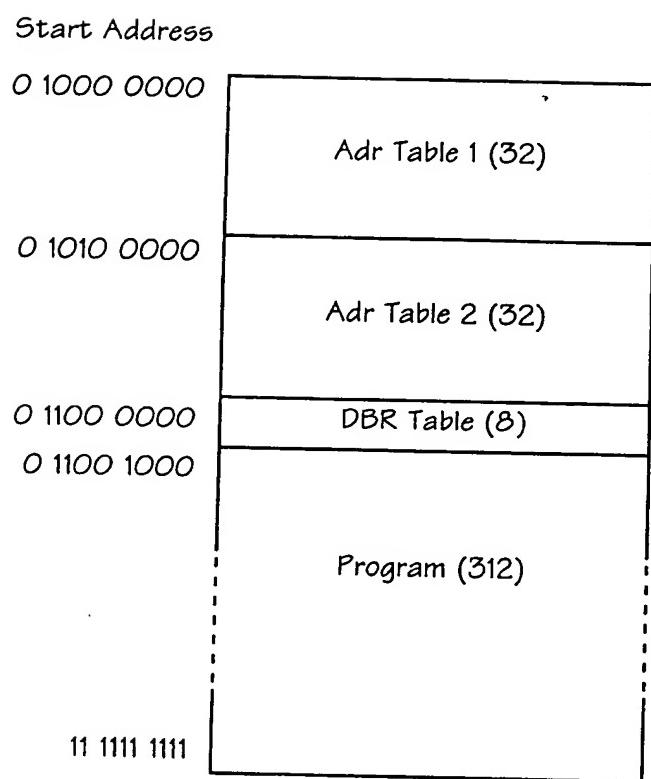


FIG. 186

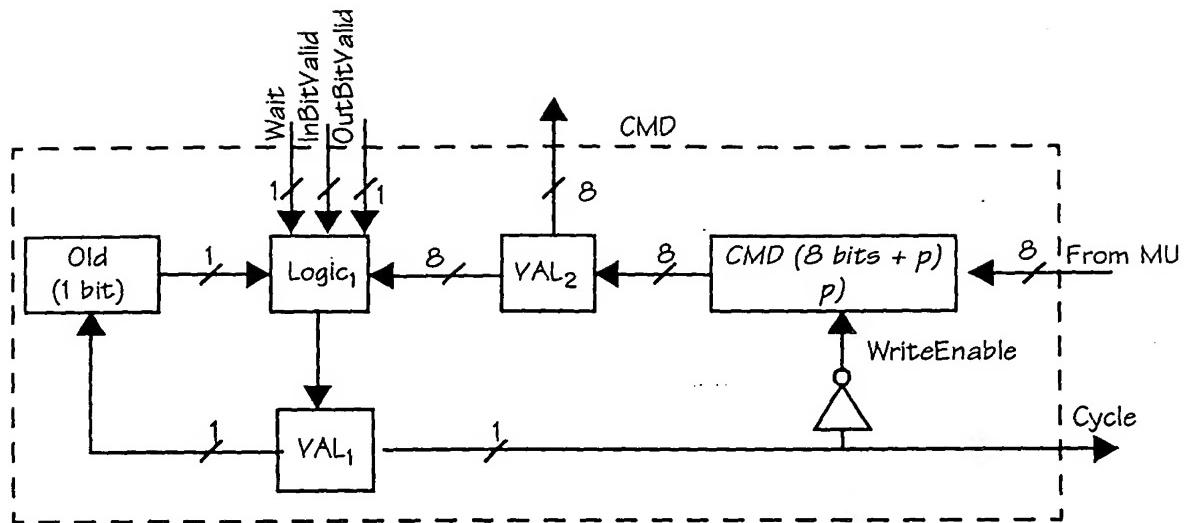


FIG. 187

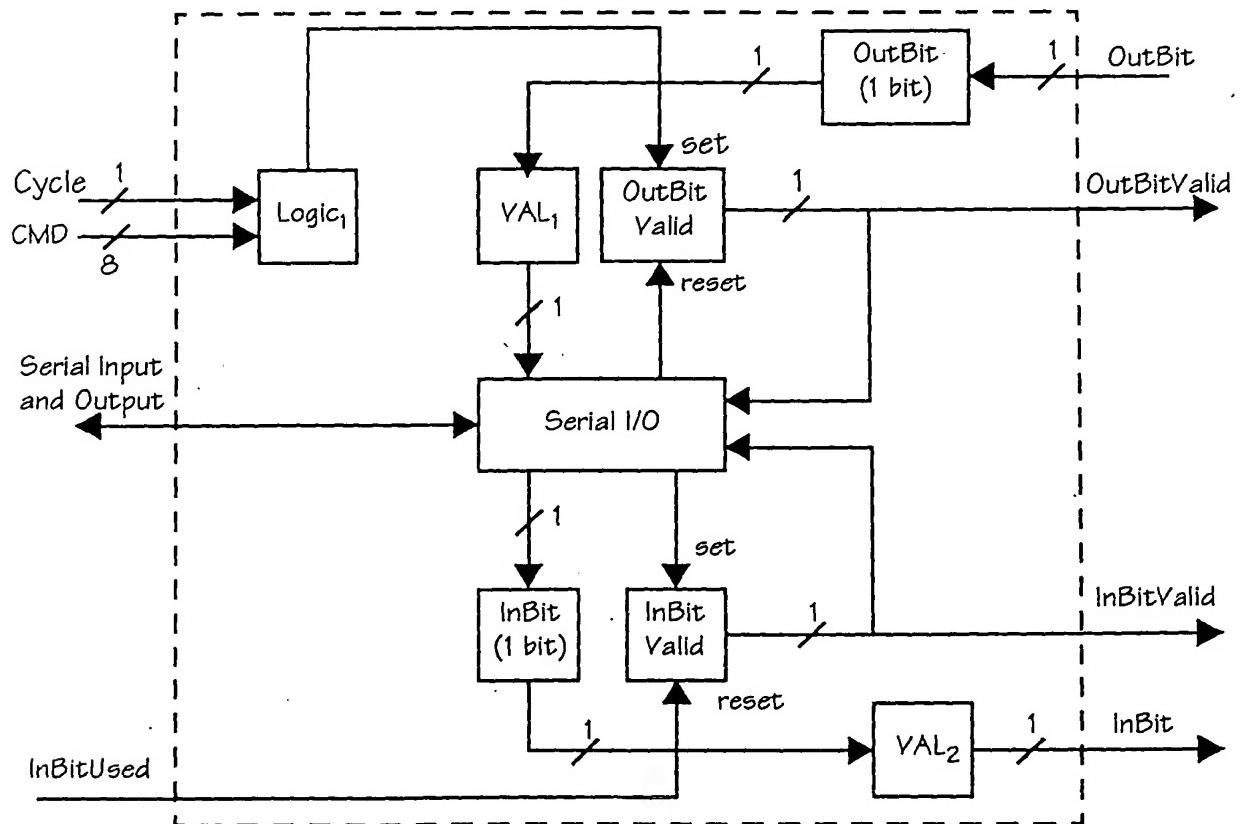


FIG. 188

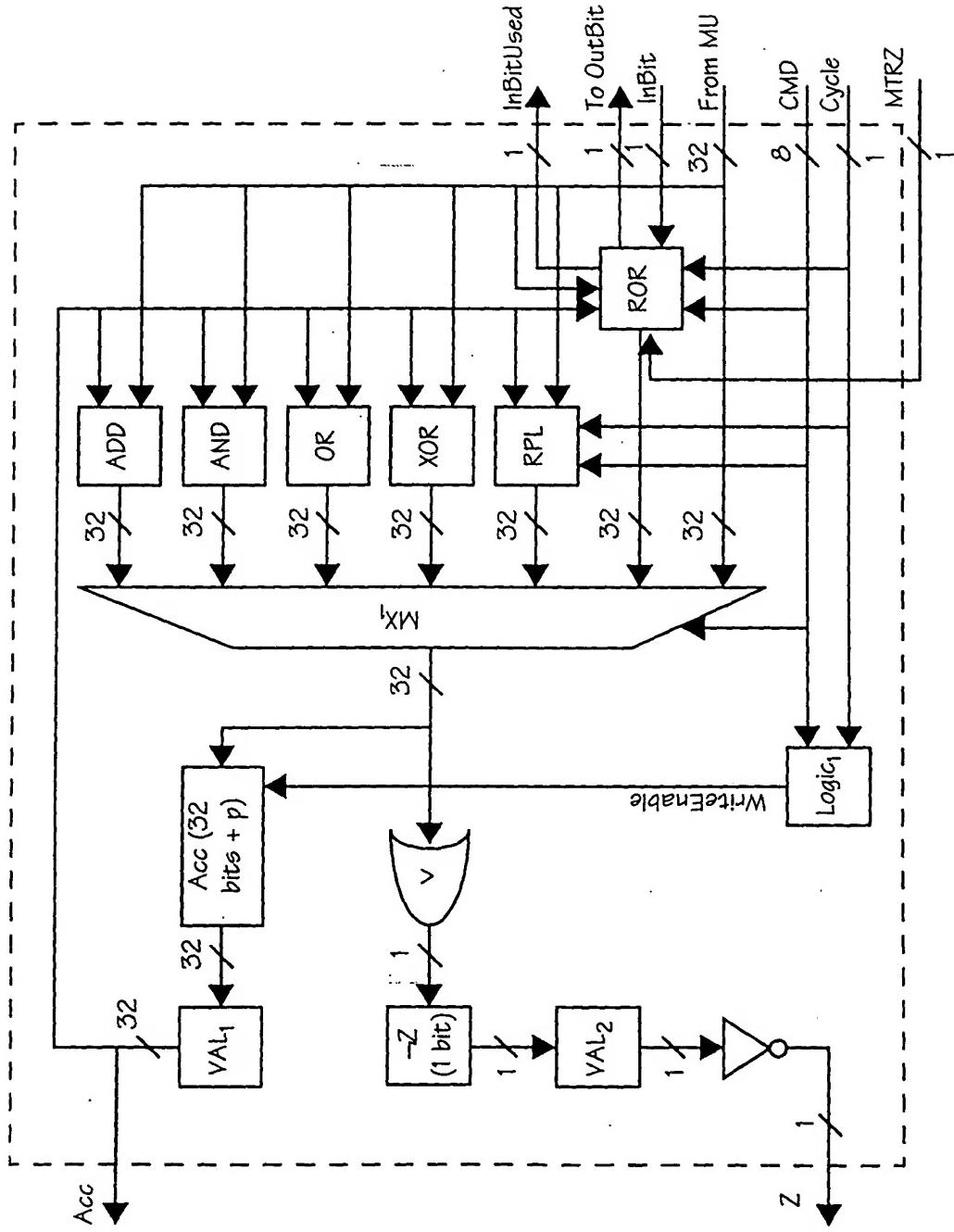


FIG. 189

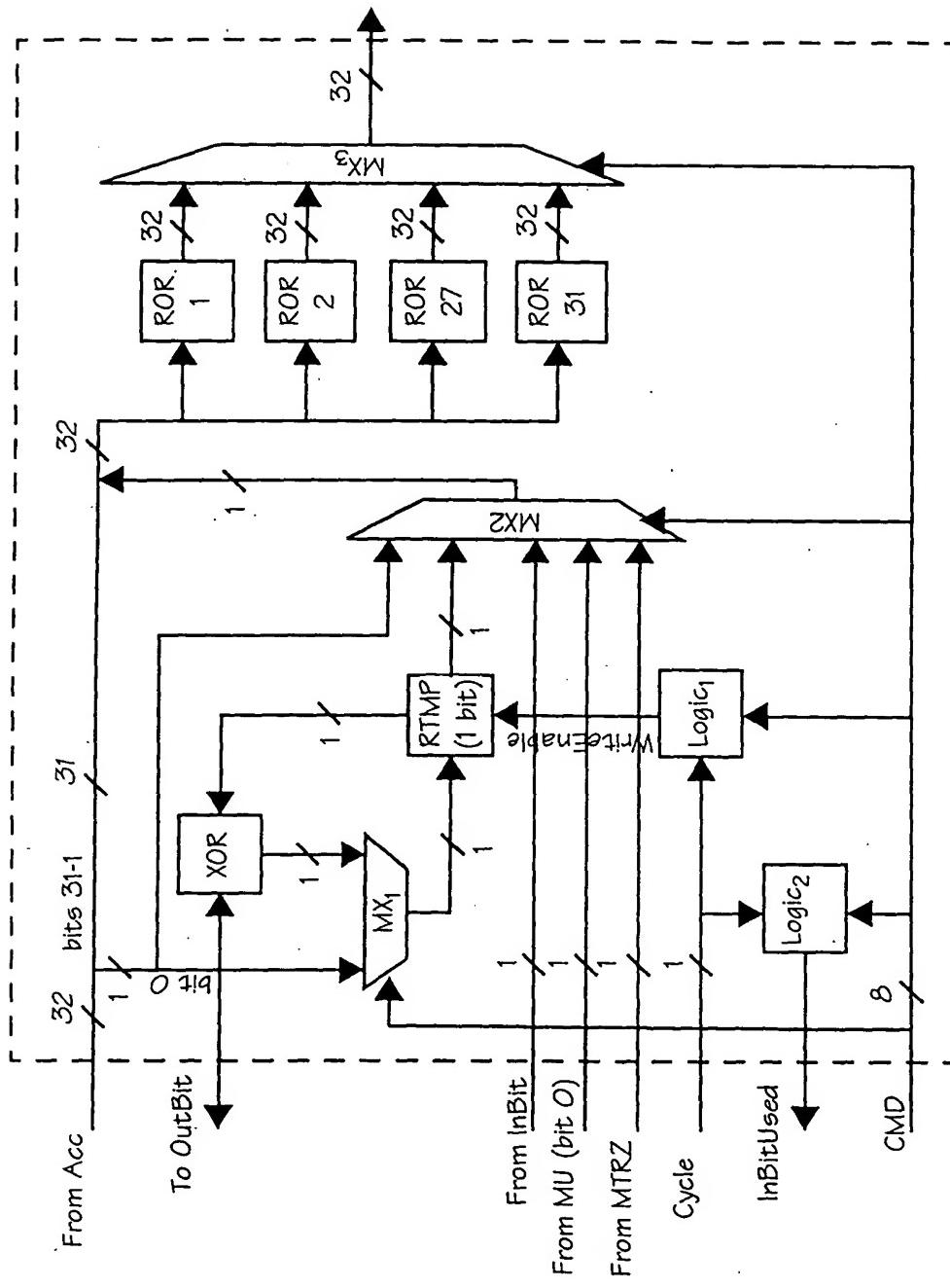


FIG. 190

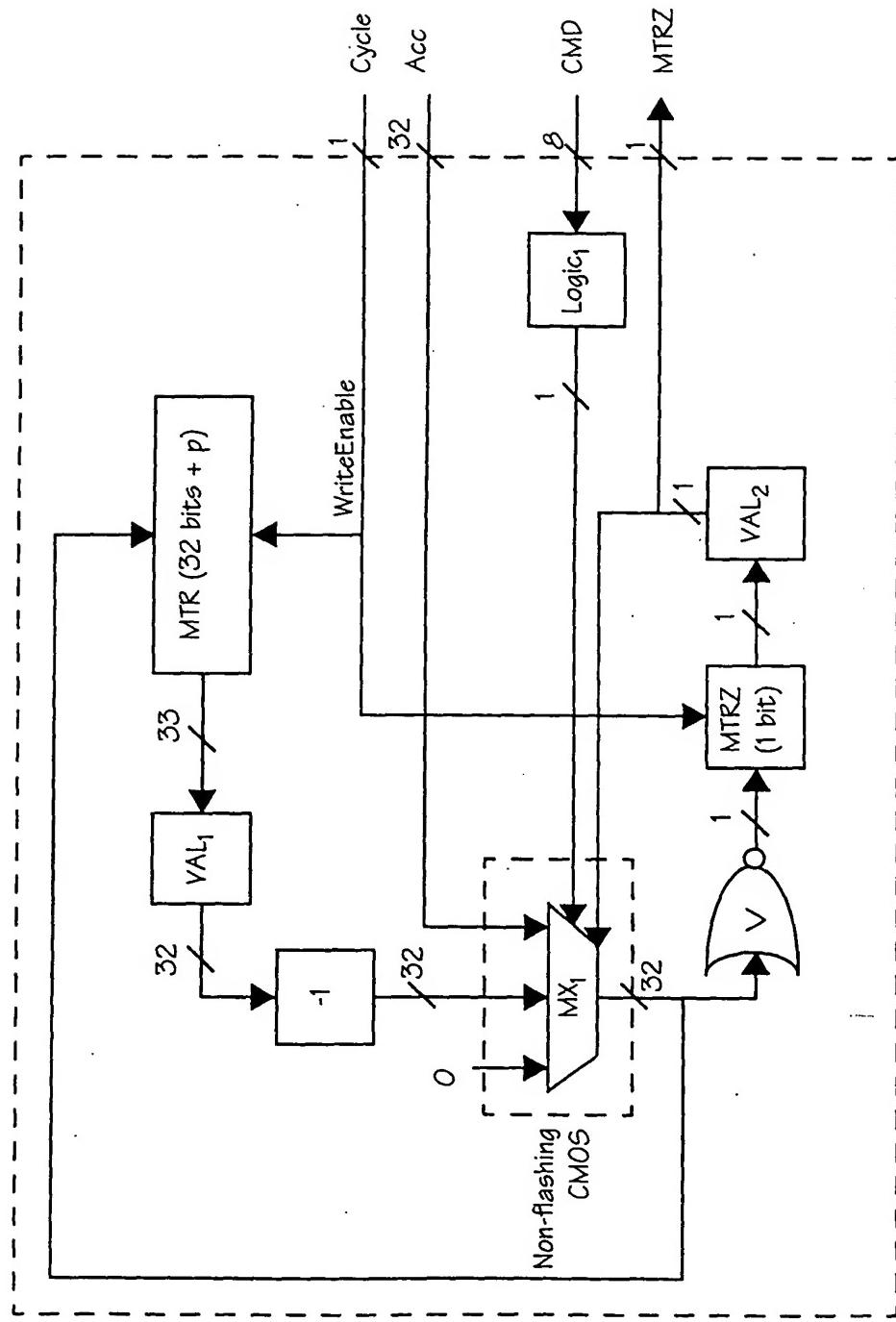


FIG. 191

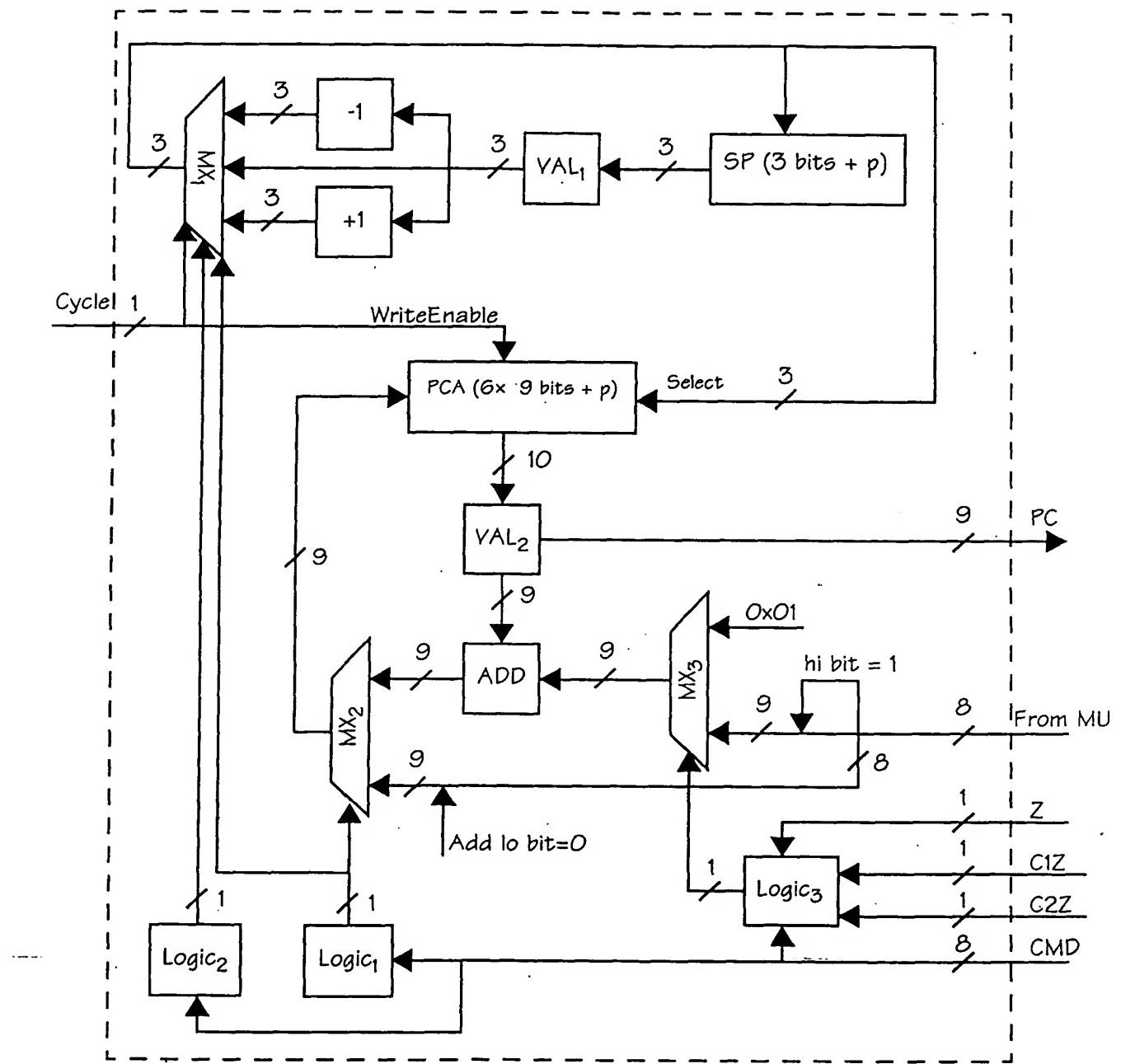


FIG. 192

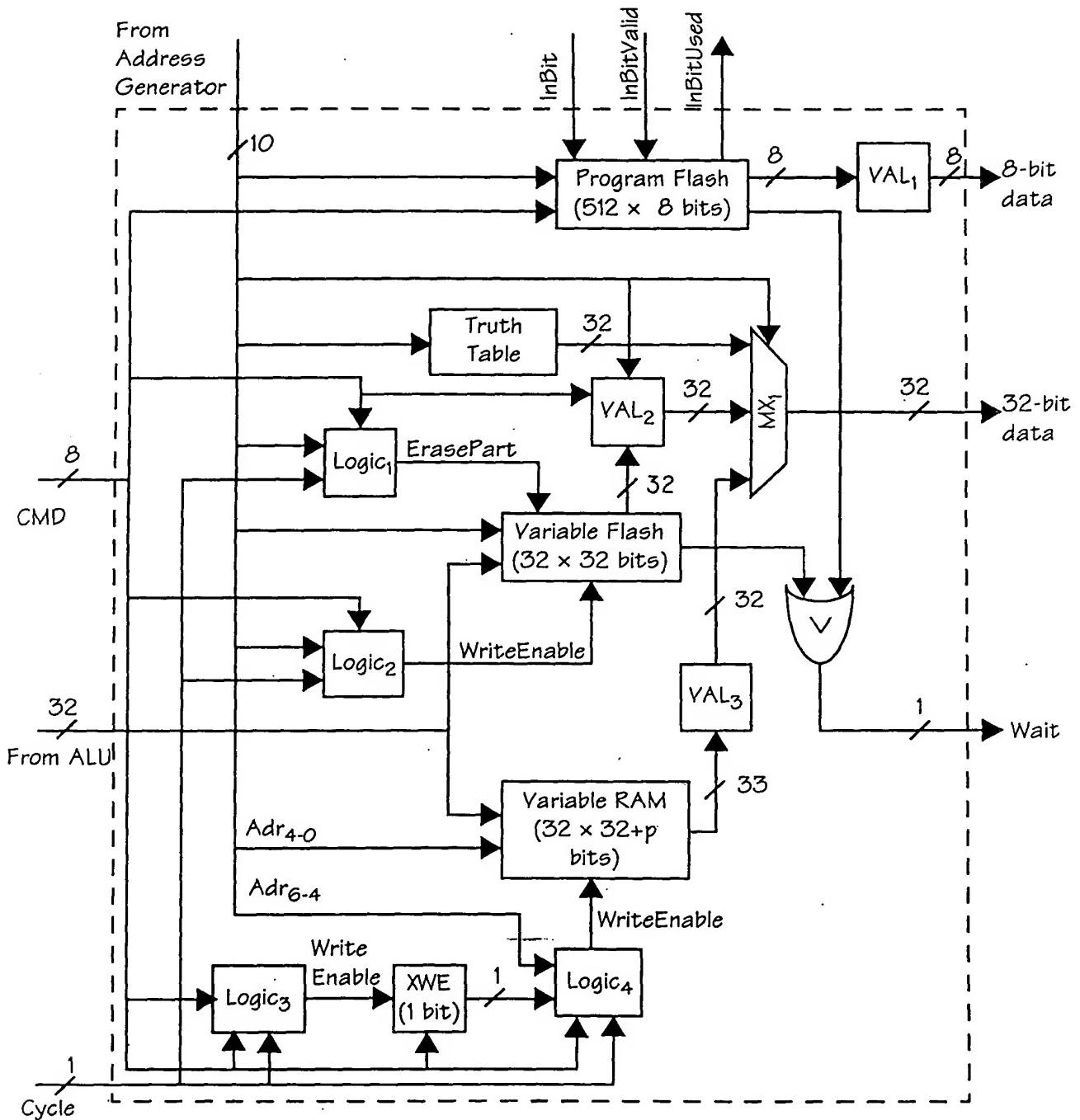


FIG. 193

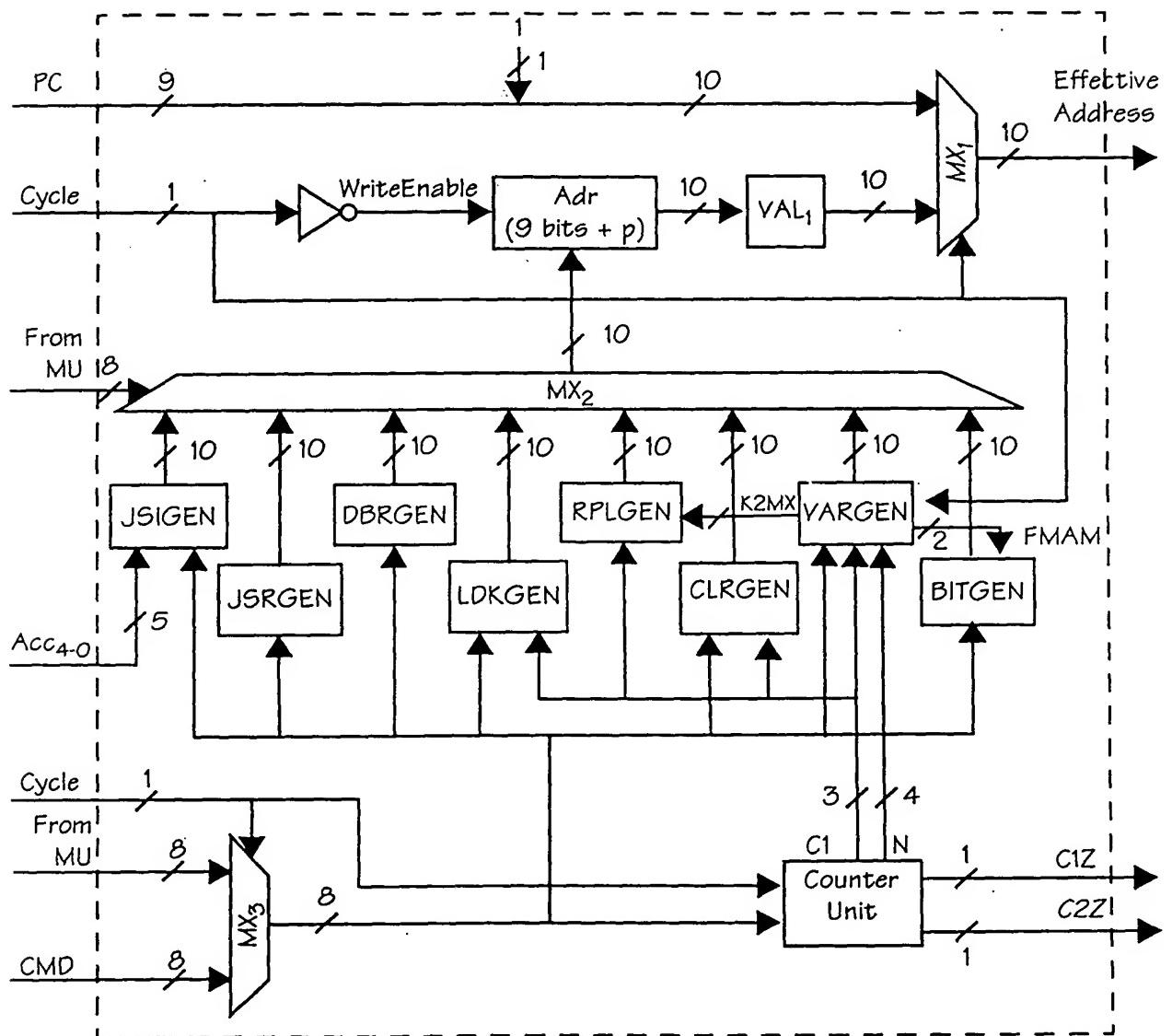


FIG. 194

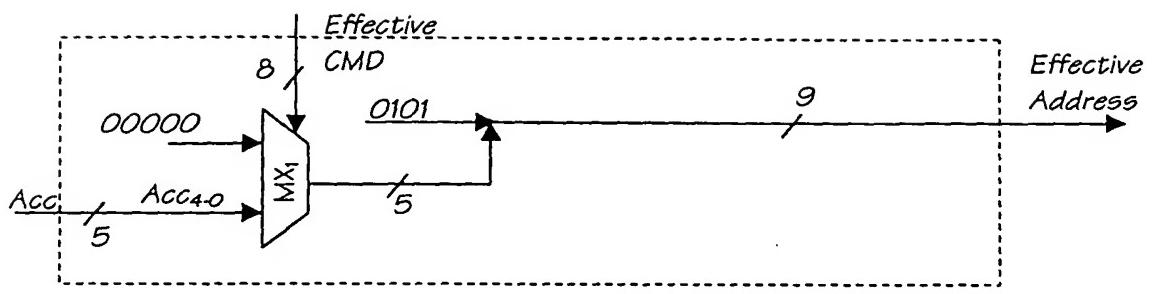


FIG. 195

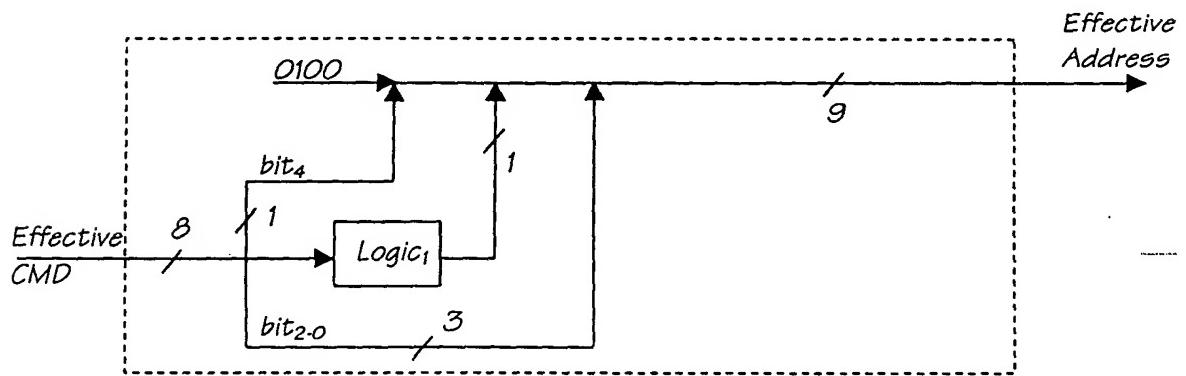


FIG. 196

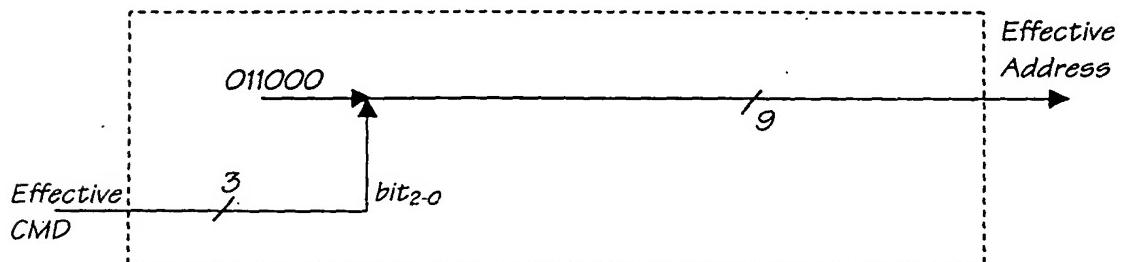


FIG. 197

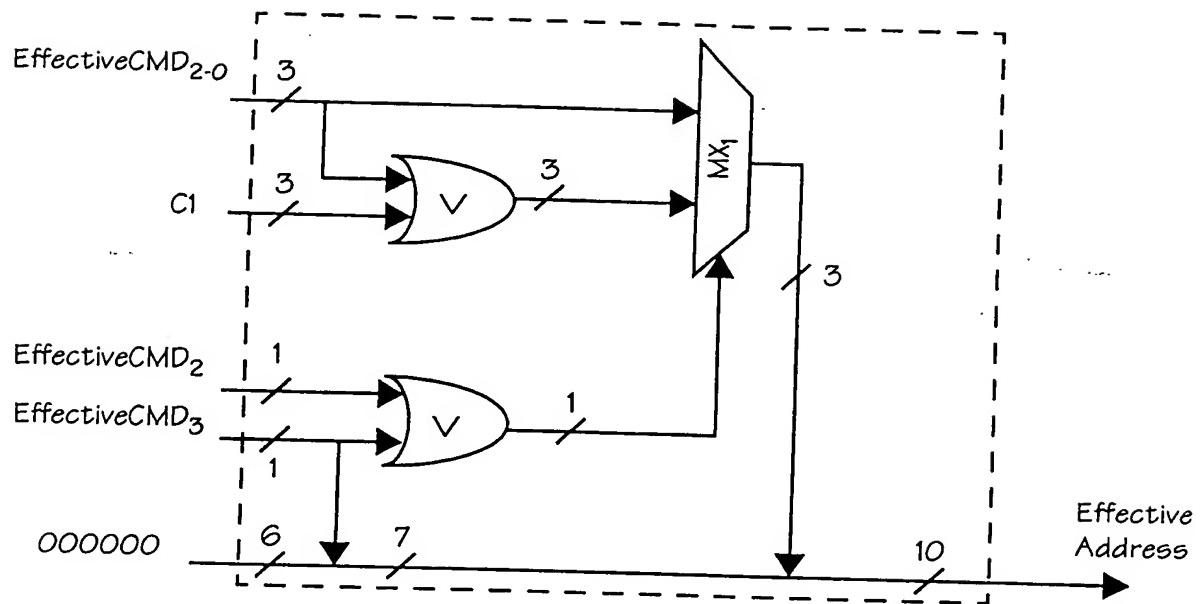
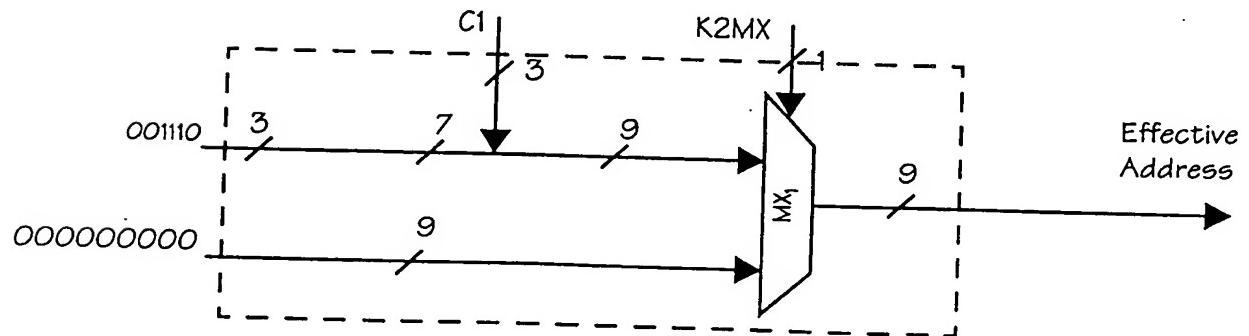


FIG. 198



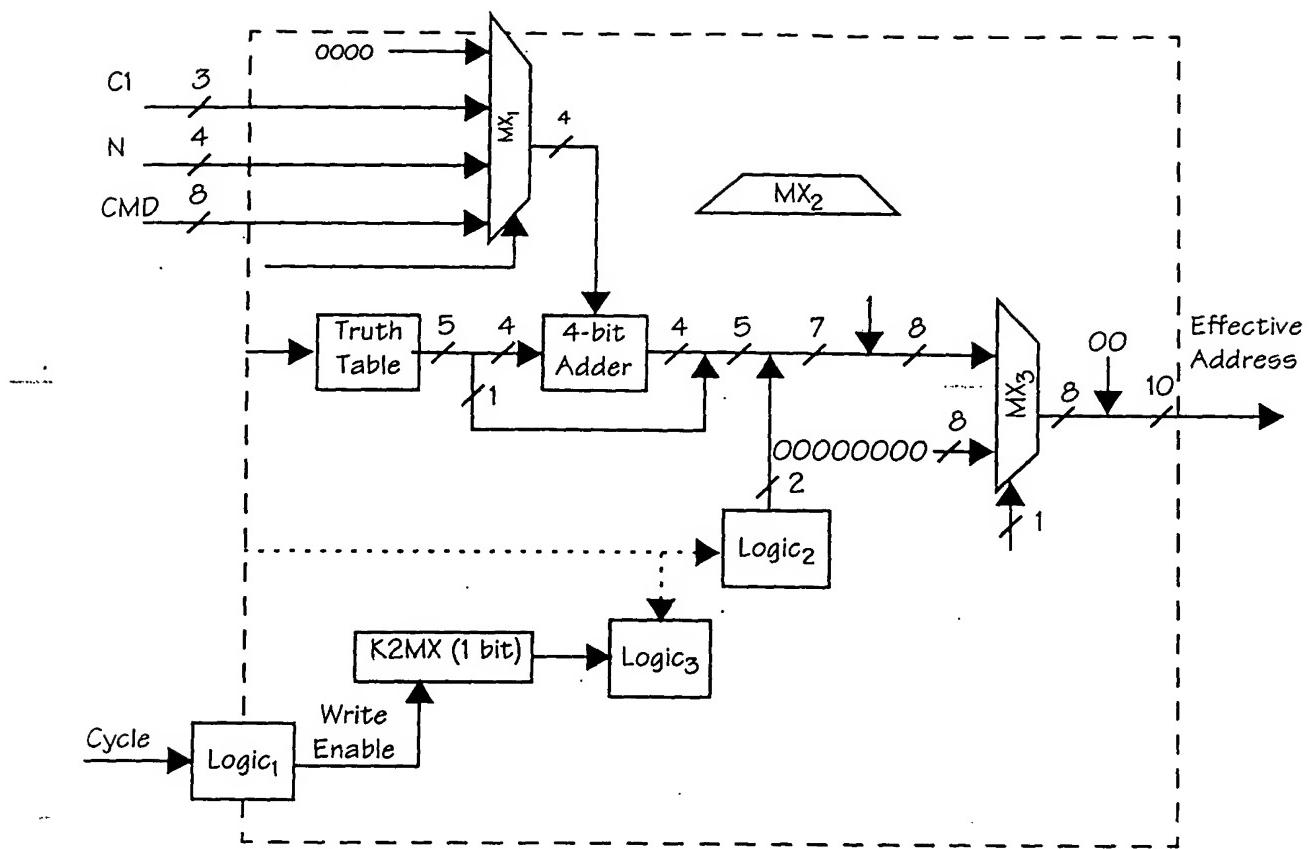


FIG. 200

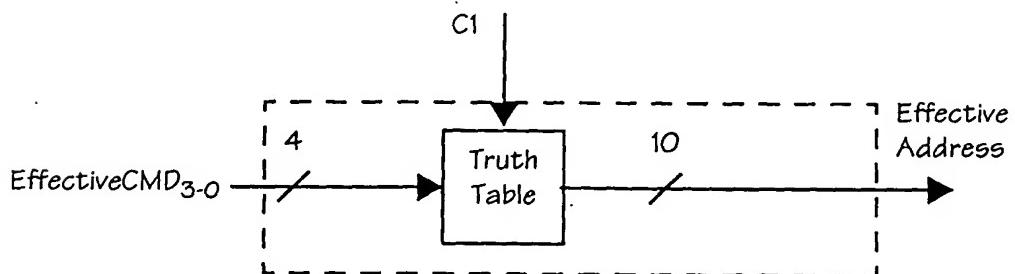
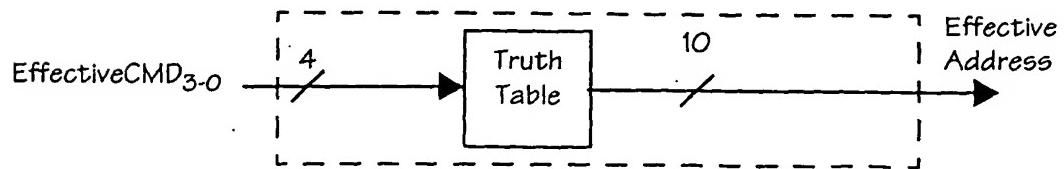


FIG. 201



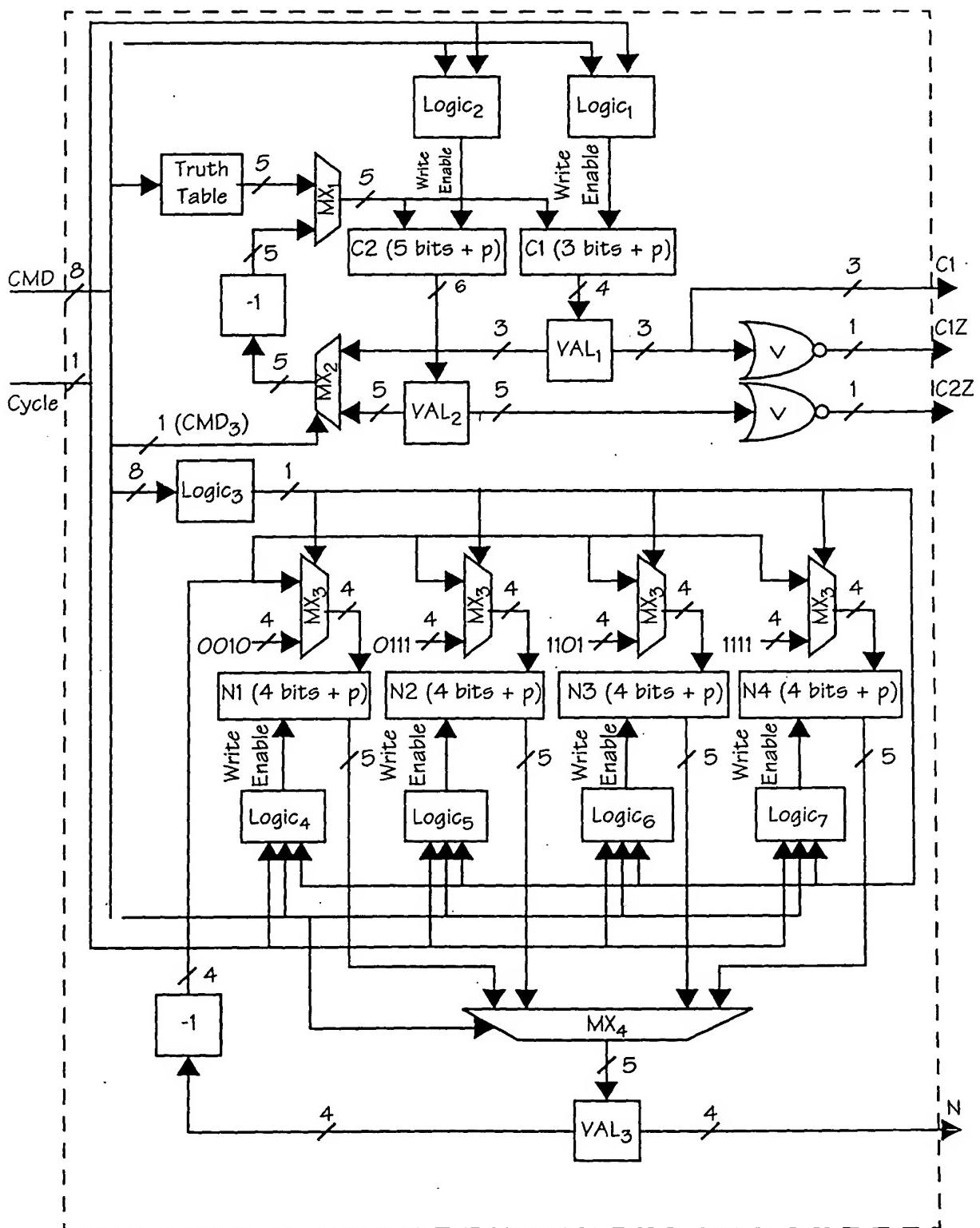


FIG. 203

705 →

DATA TYPE	BITS
Factory Code	16
Batch Number	32
Serial Number	48
Manufacturing Date	16
Media Length	24
Media Type	8
Preprinted Media Length	16
Cyan Ink Viscosity	8
Magenta Ink Viscosity	8
Yellow Ink Viscosity	8
Cyan Drop Volume	8
Magenta Drop Volume	8
Yellow Drop Volume	8
Cyan Ink Color	24
Magenta Ink Color	24
Yellow Ink Color	24
Remaining-media Length Indicator	16
Authentication Key	128
Copyrightable bit pattern	512
Reserved for Camera Use	88
TOTAL	1024

728 →

FIG. 204

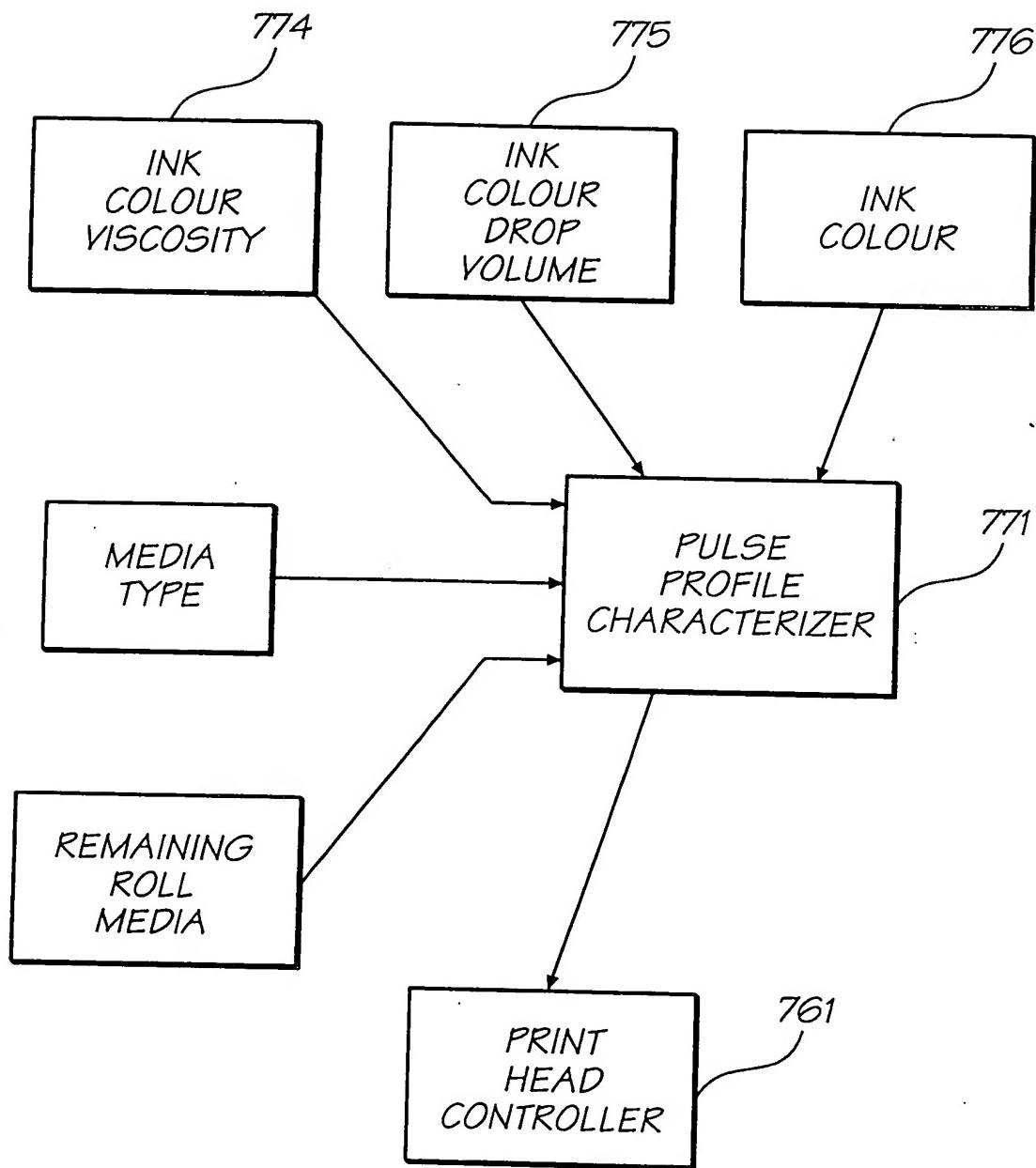


FIG. 205

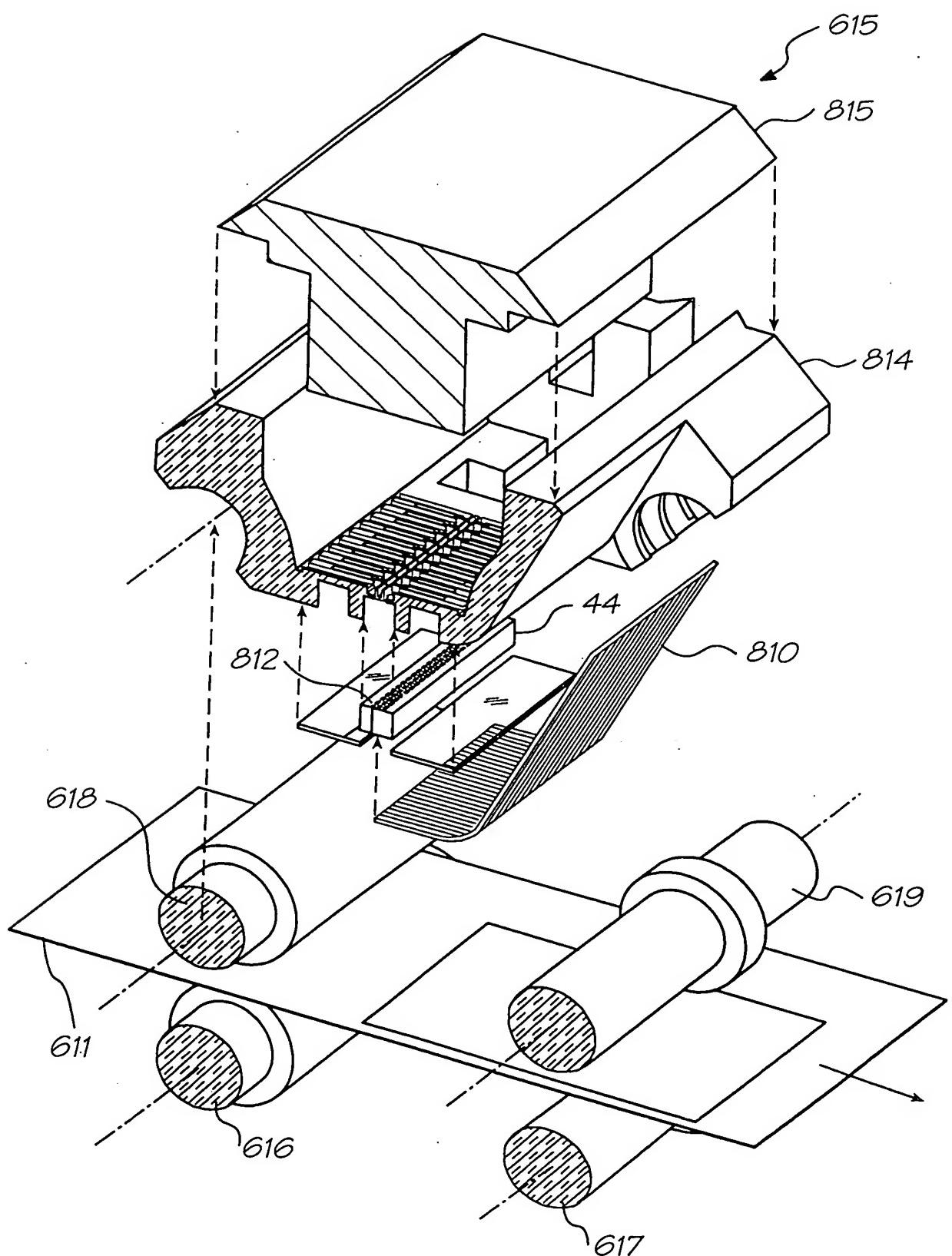


FIG. 206

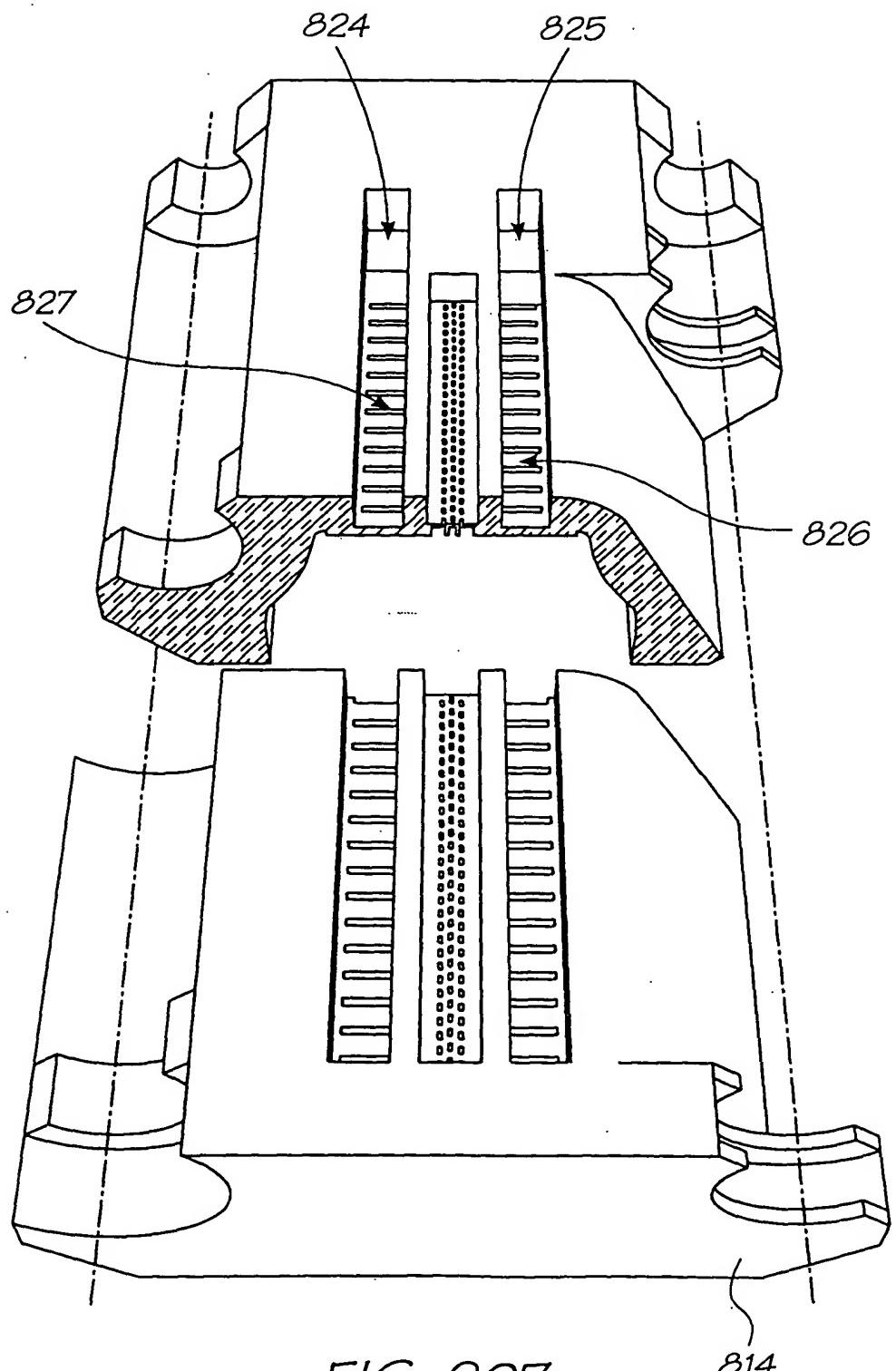


FIG. 207

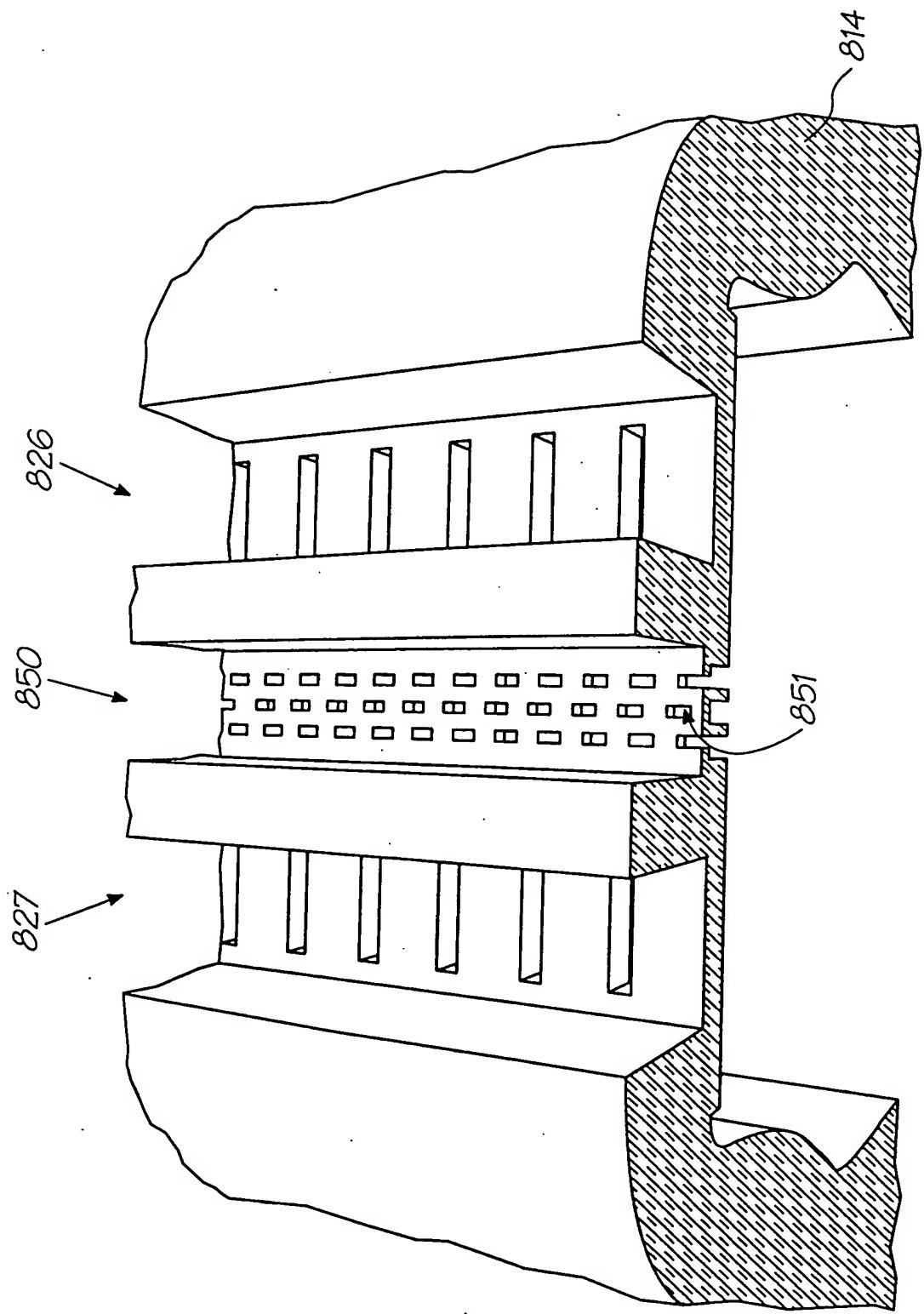


FIG. 208

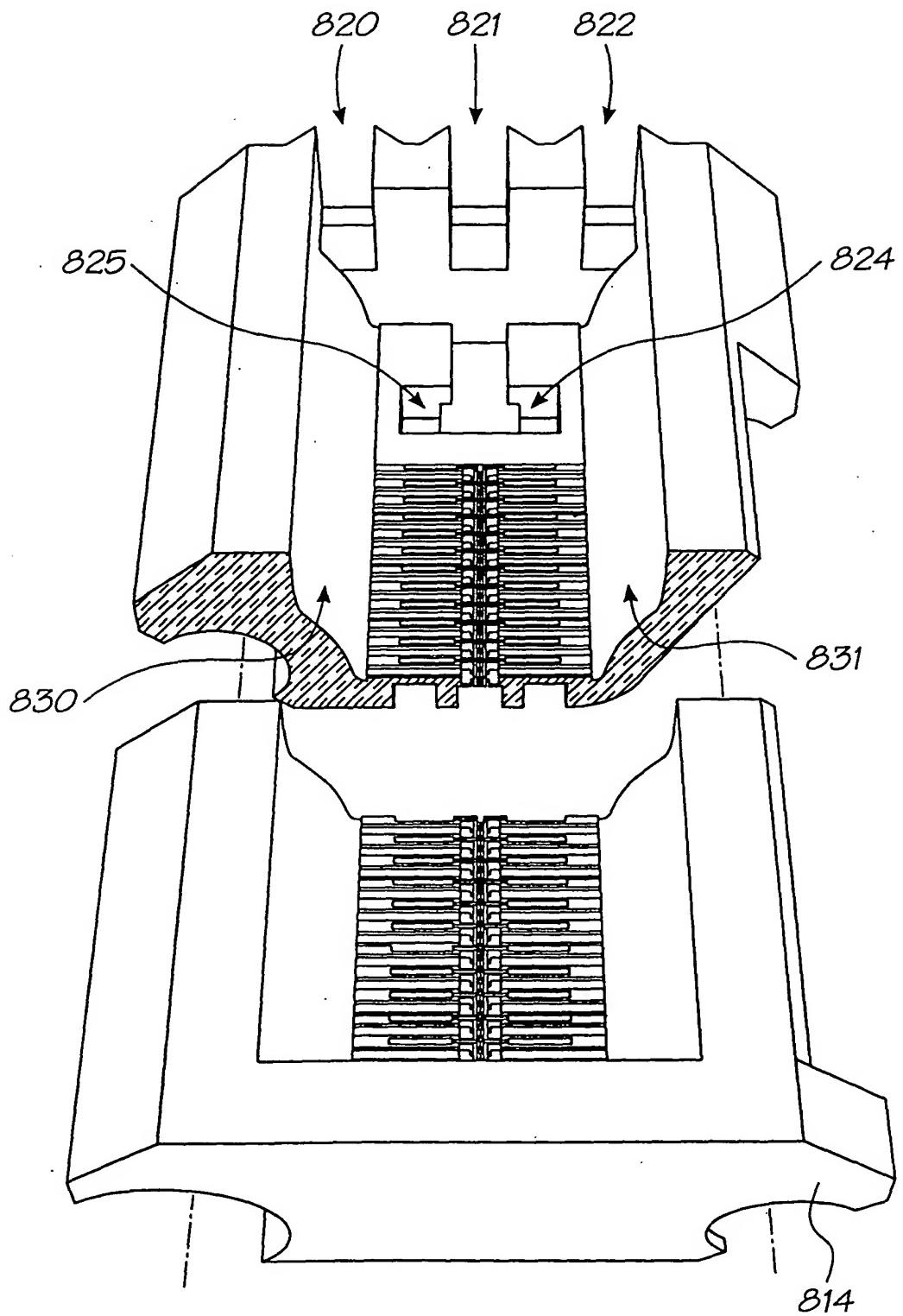


FIG. 209

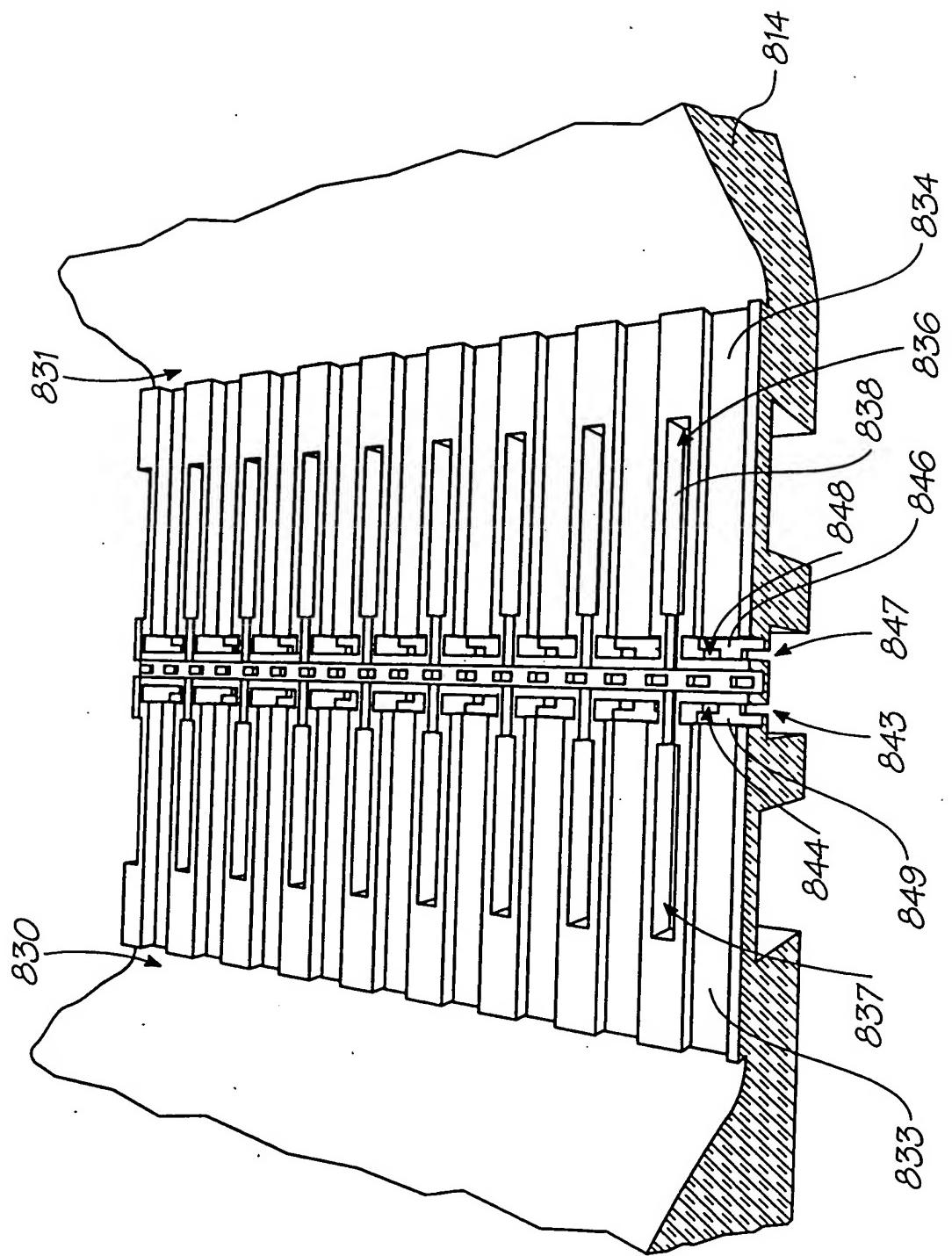


FIG. 210

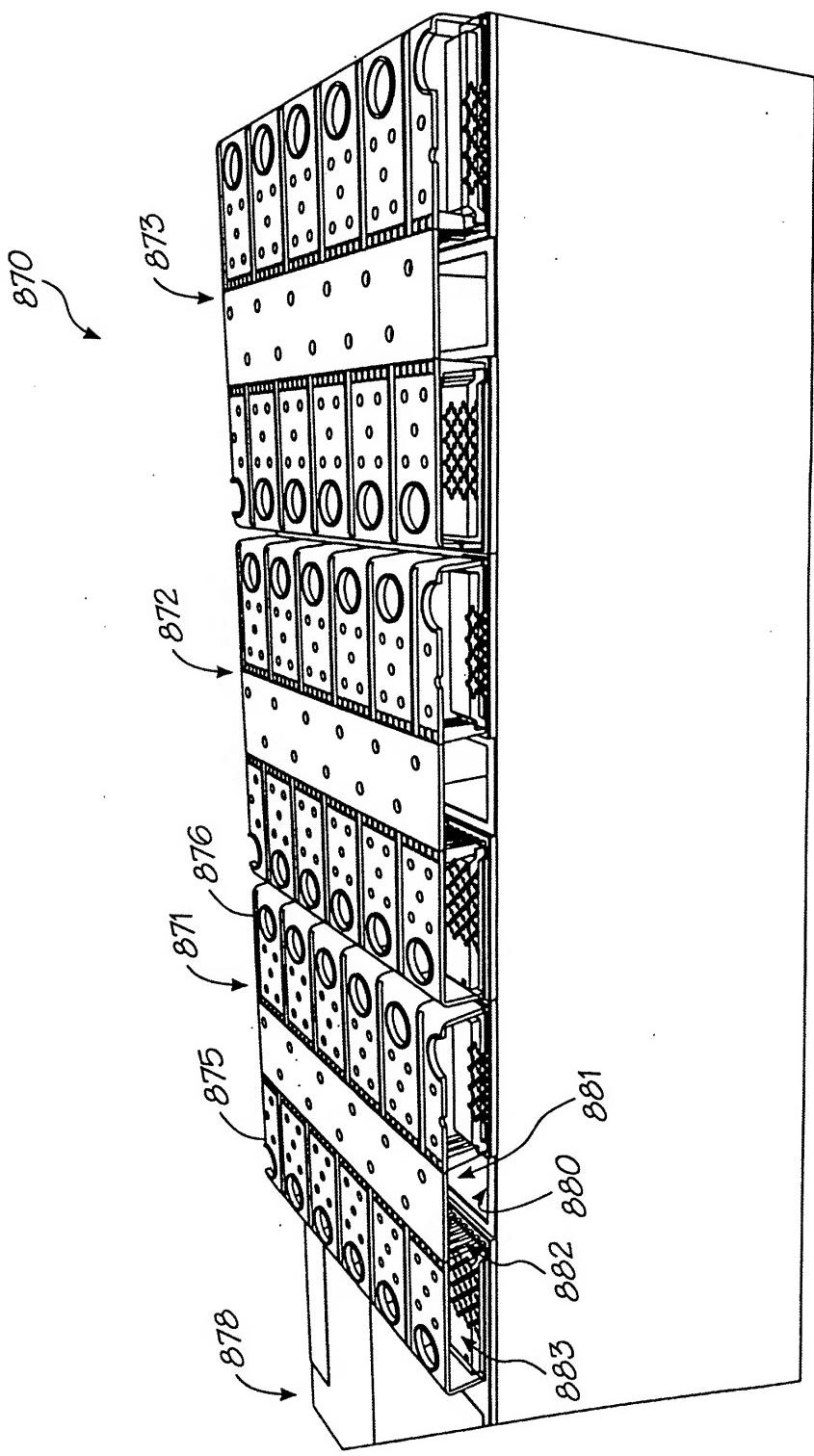


FIG. 211

FIG. 212

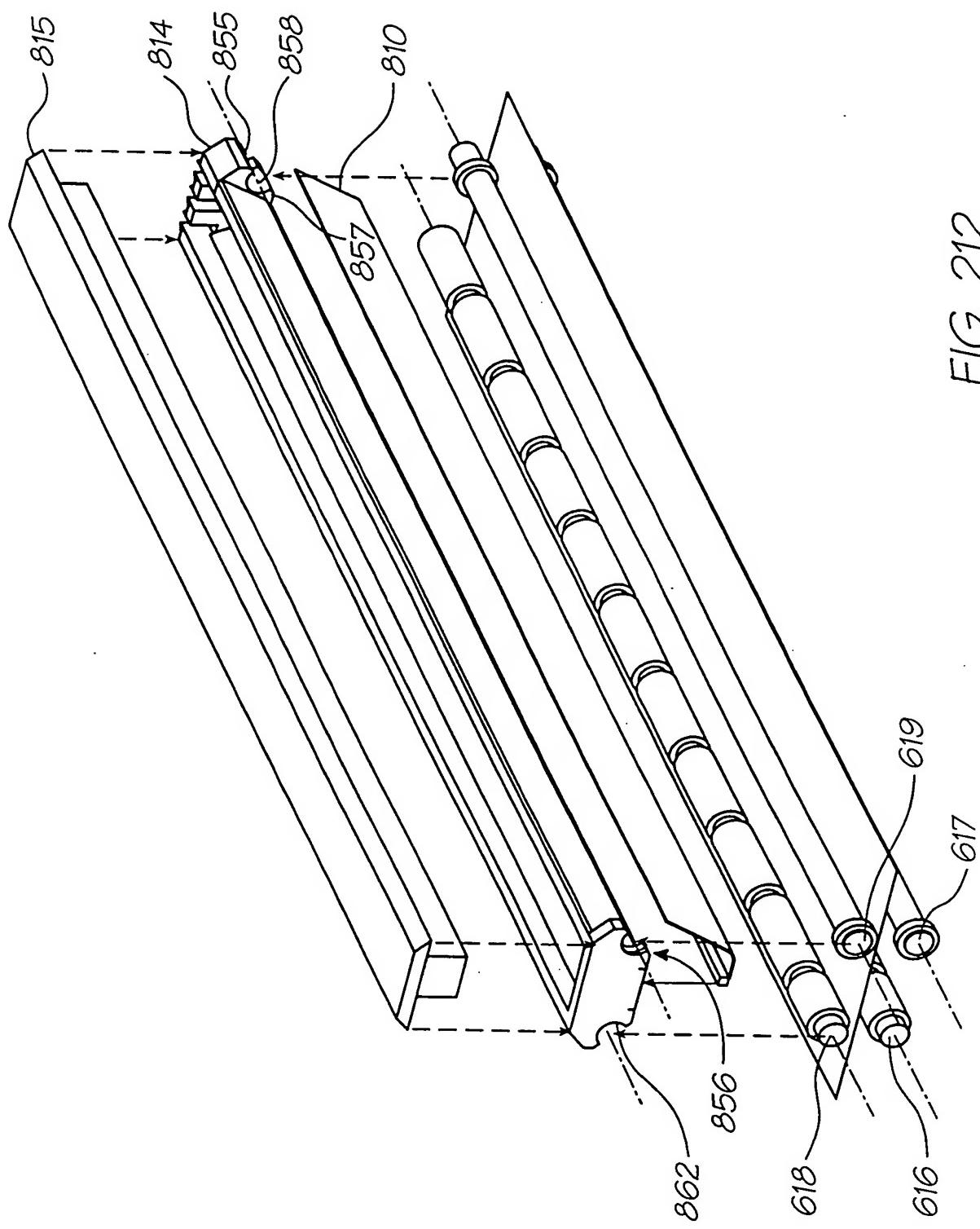


FIG. 213

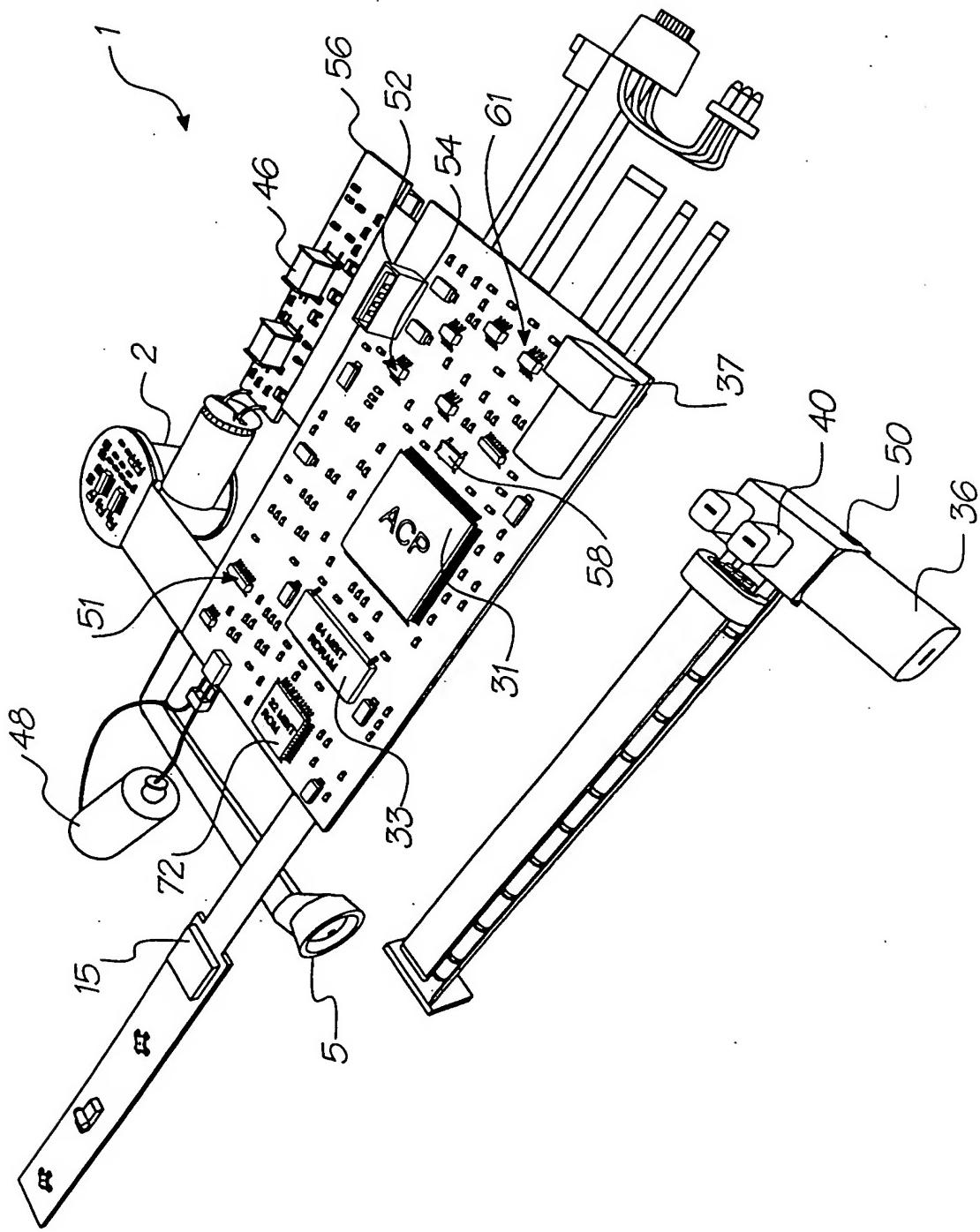


FIG. 214

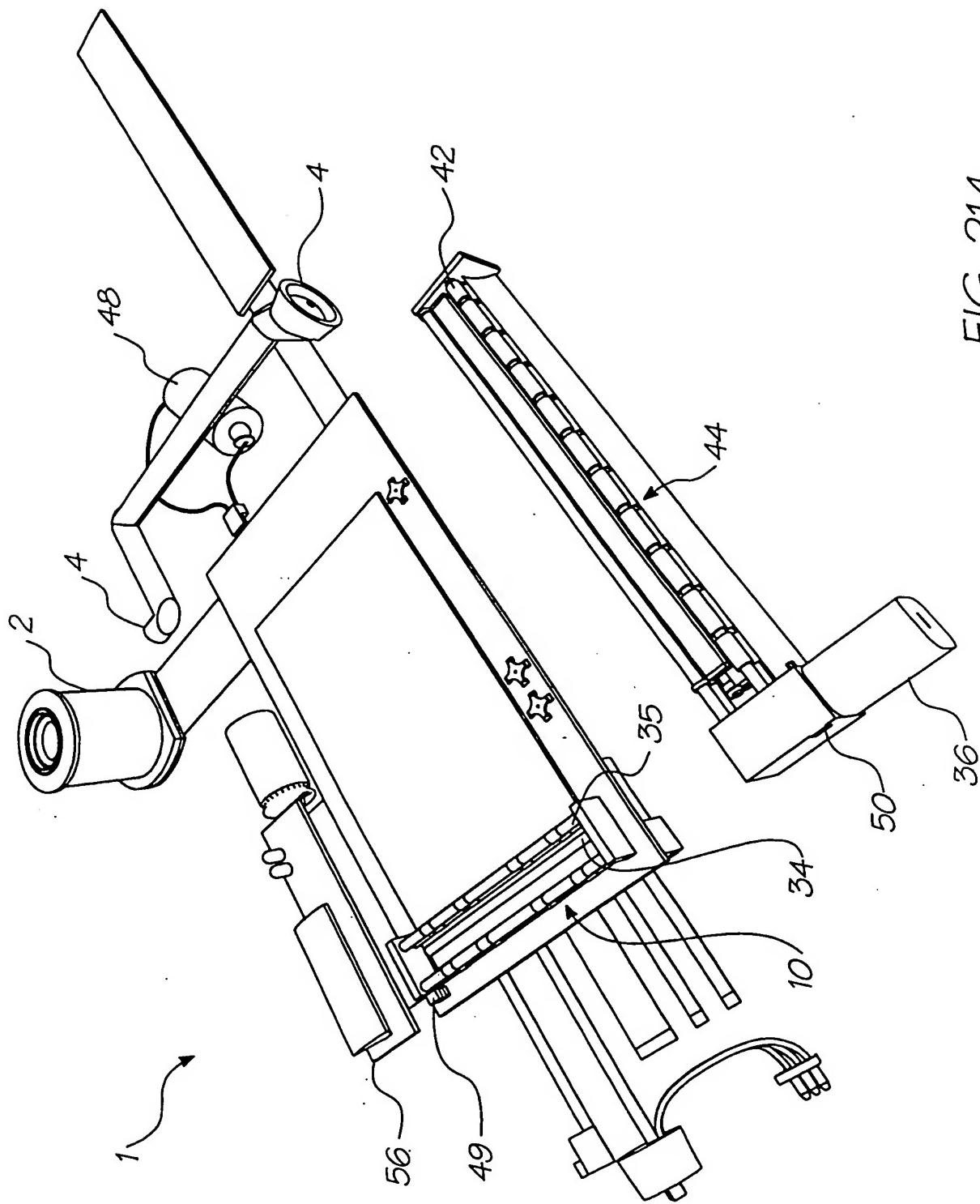


FIG. 215

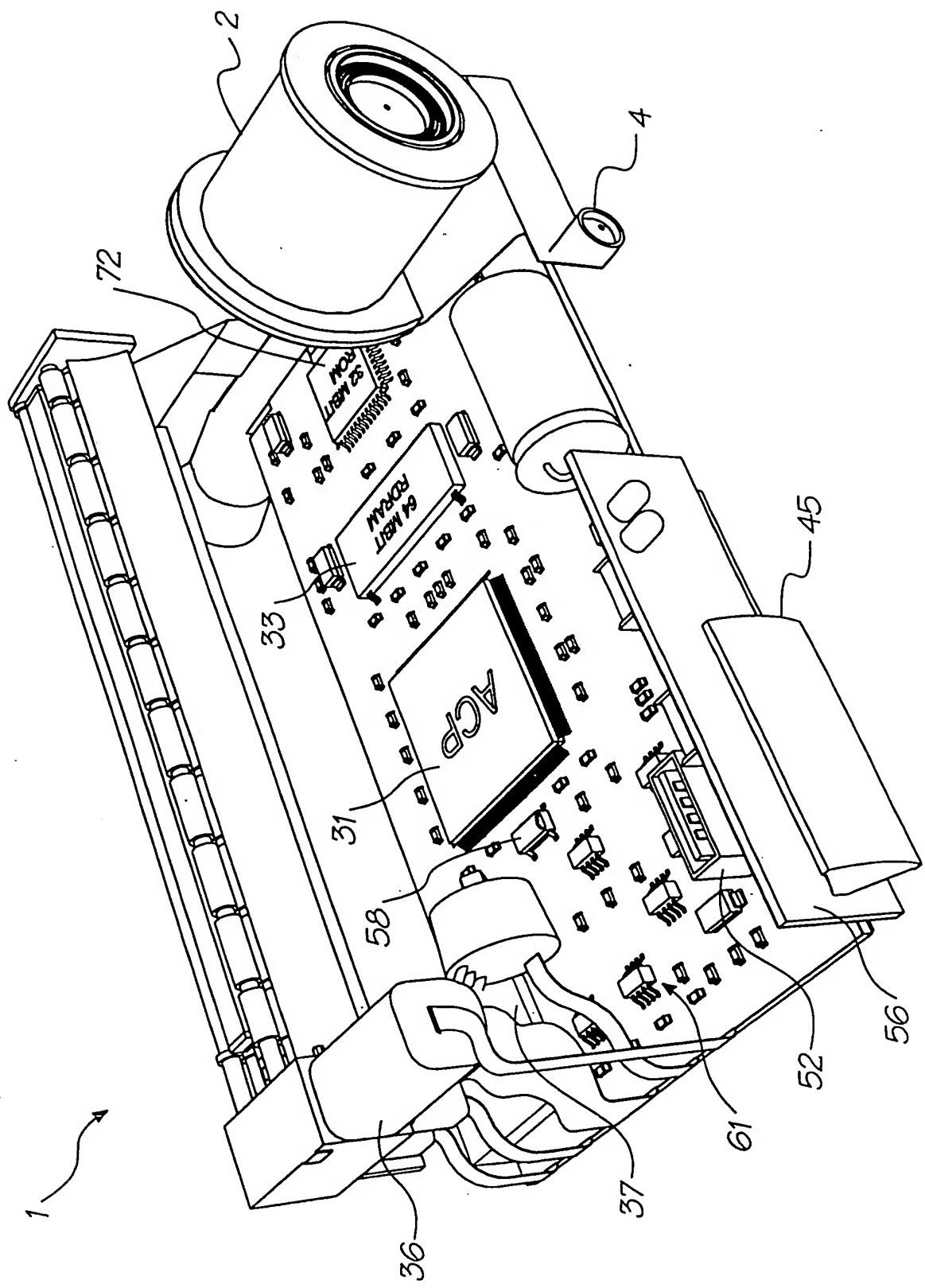


FIG. 216

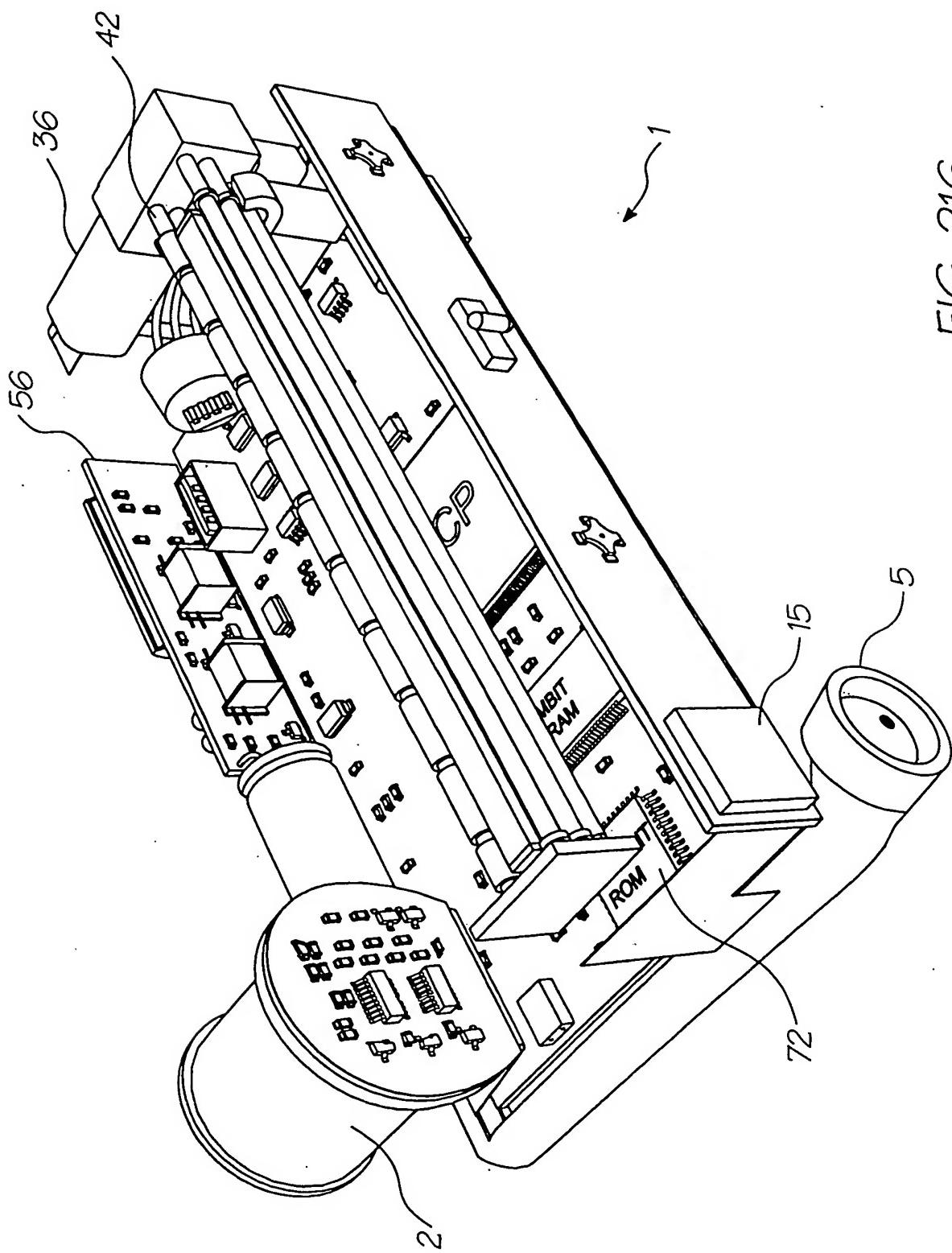
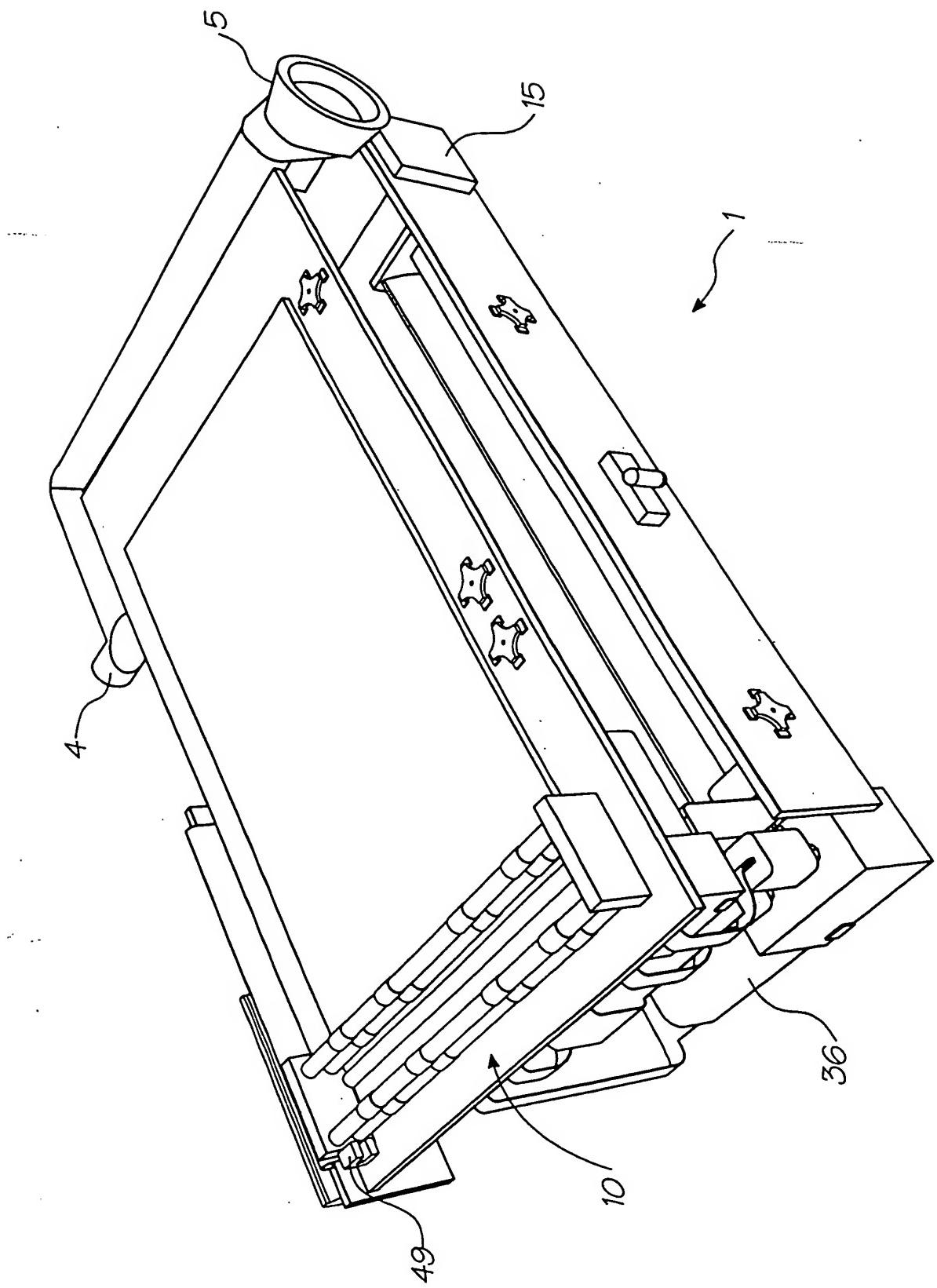


FIG. 217



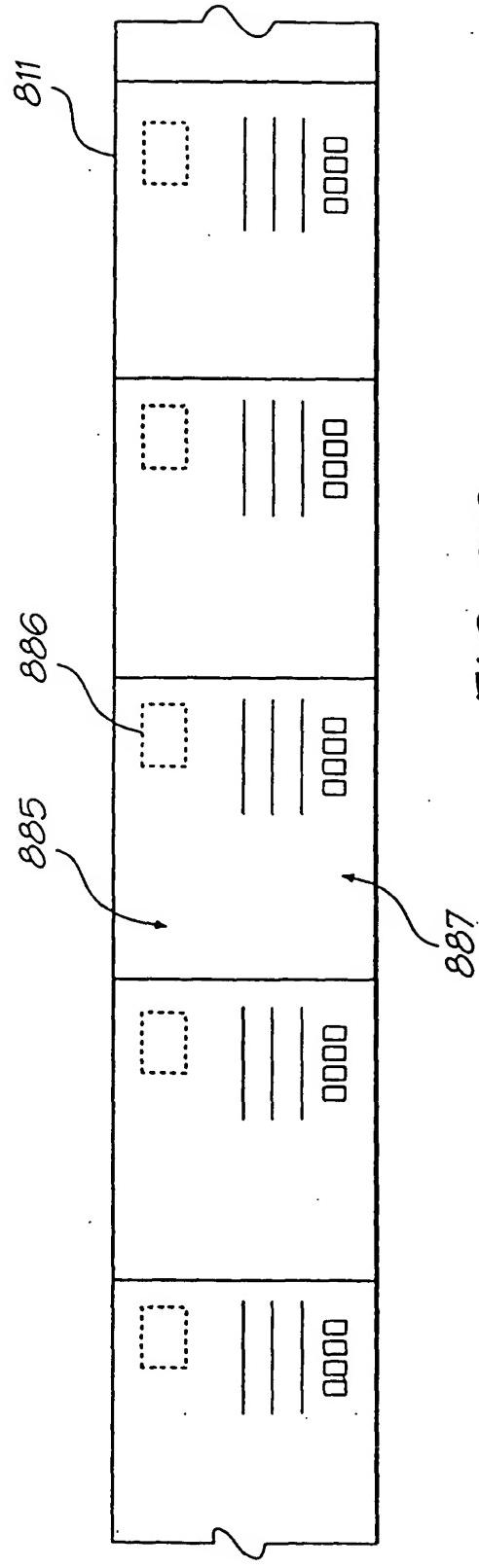


FIG. 218

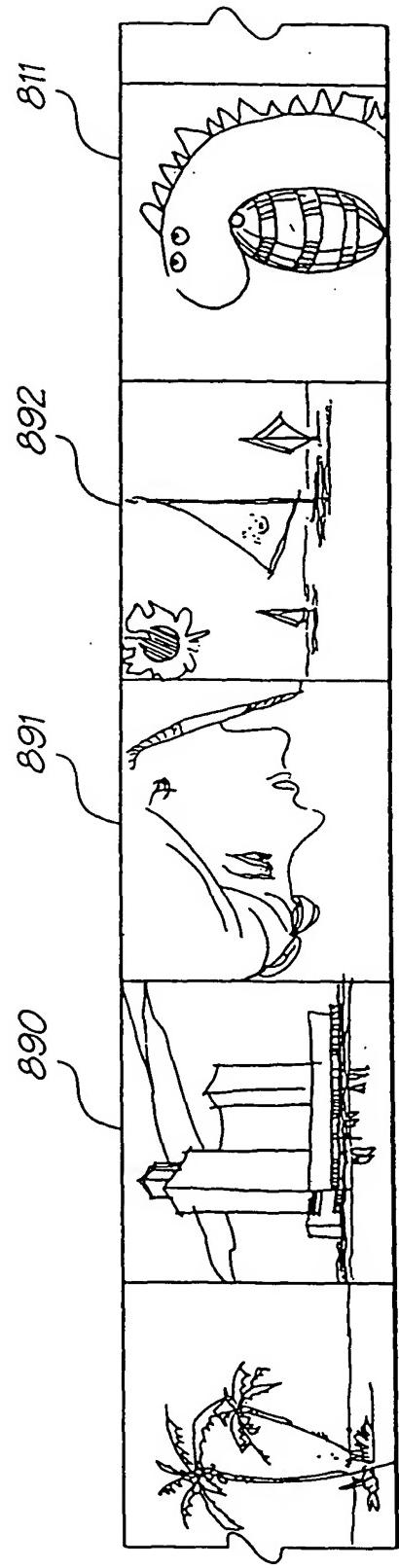
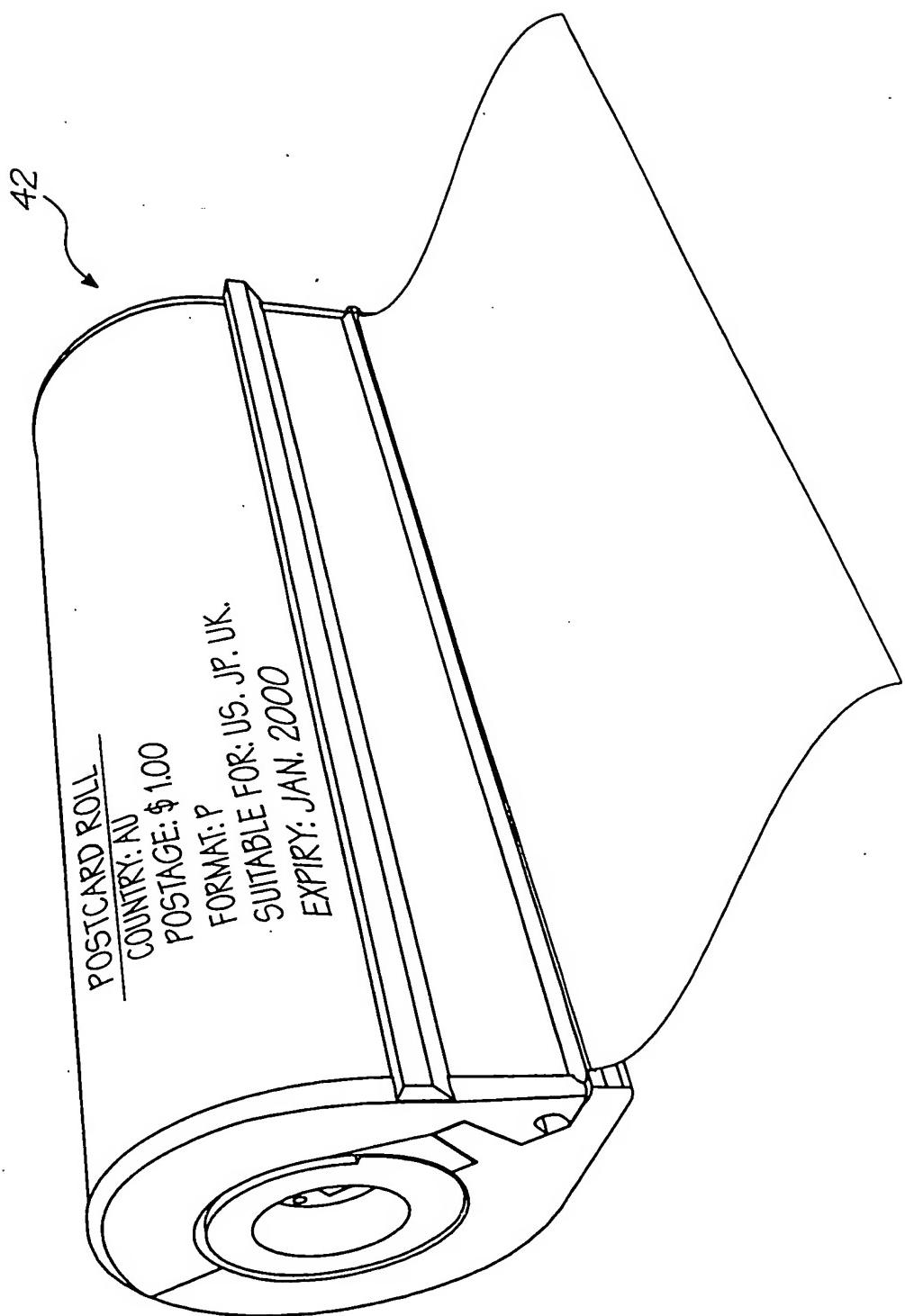


FIG. 219

FIG. 220



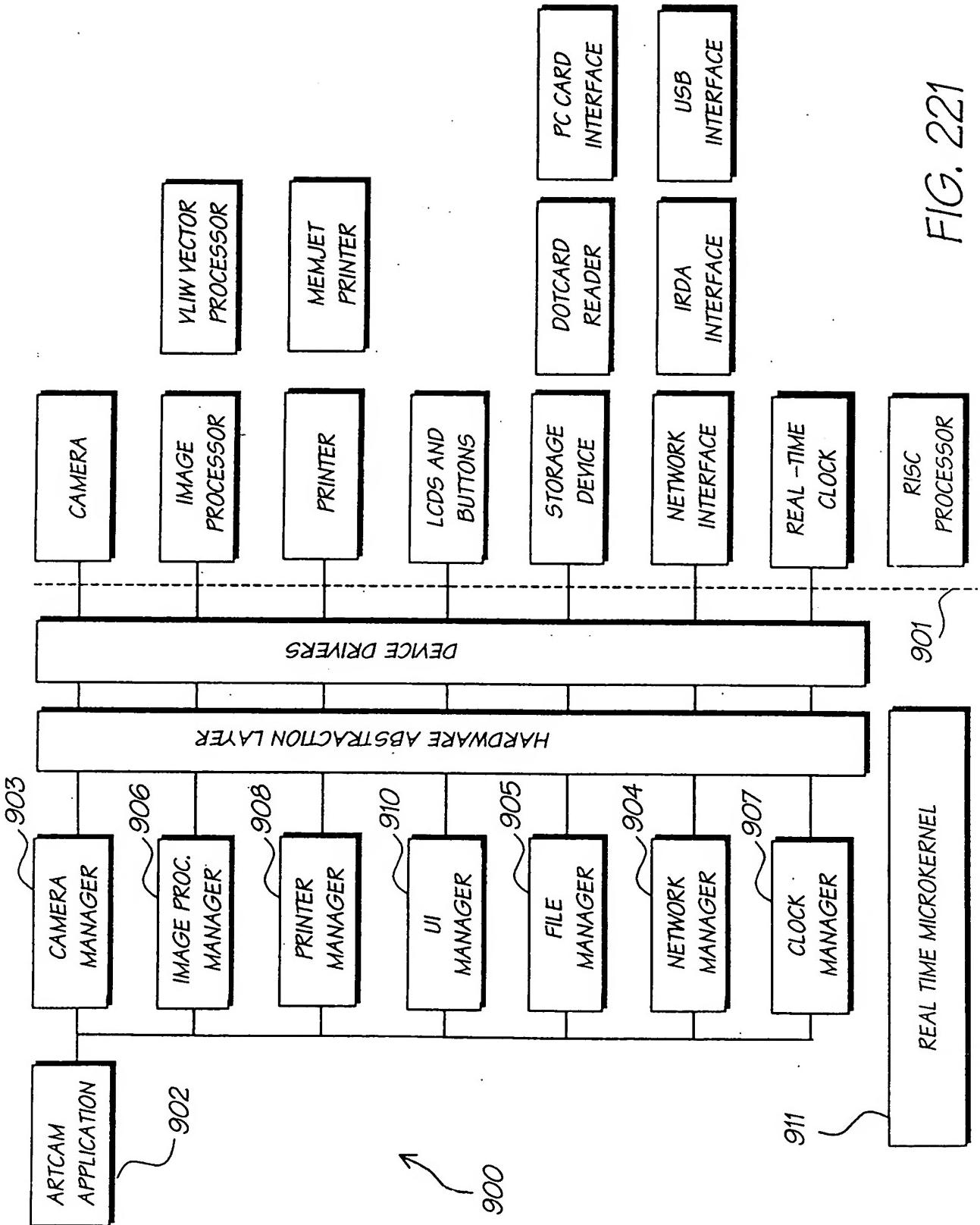


FIG. 221

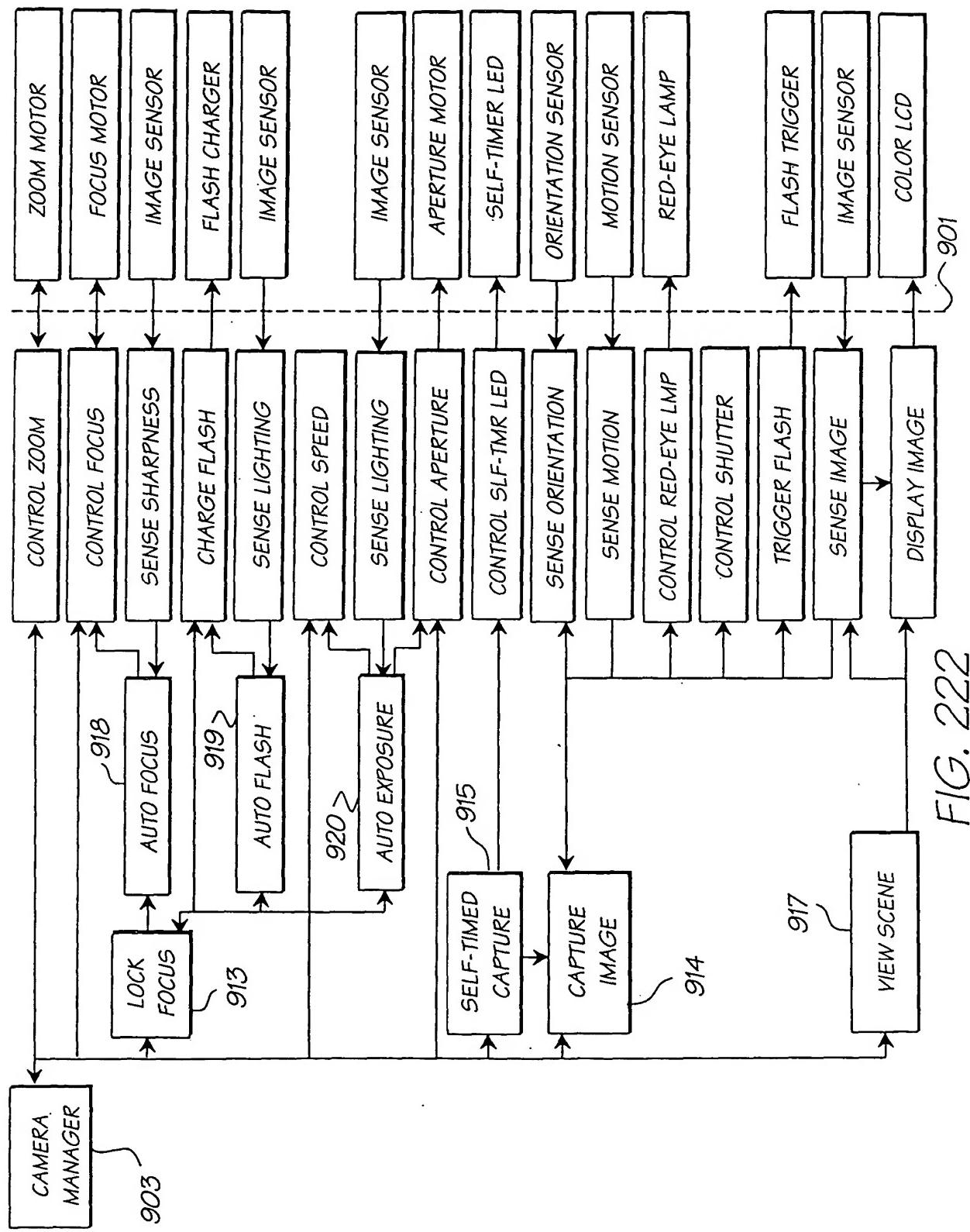


FIG. 222

901

FIG. 222

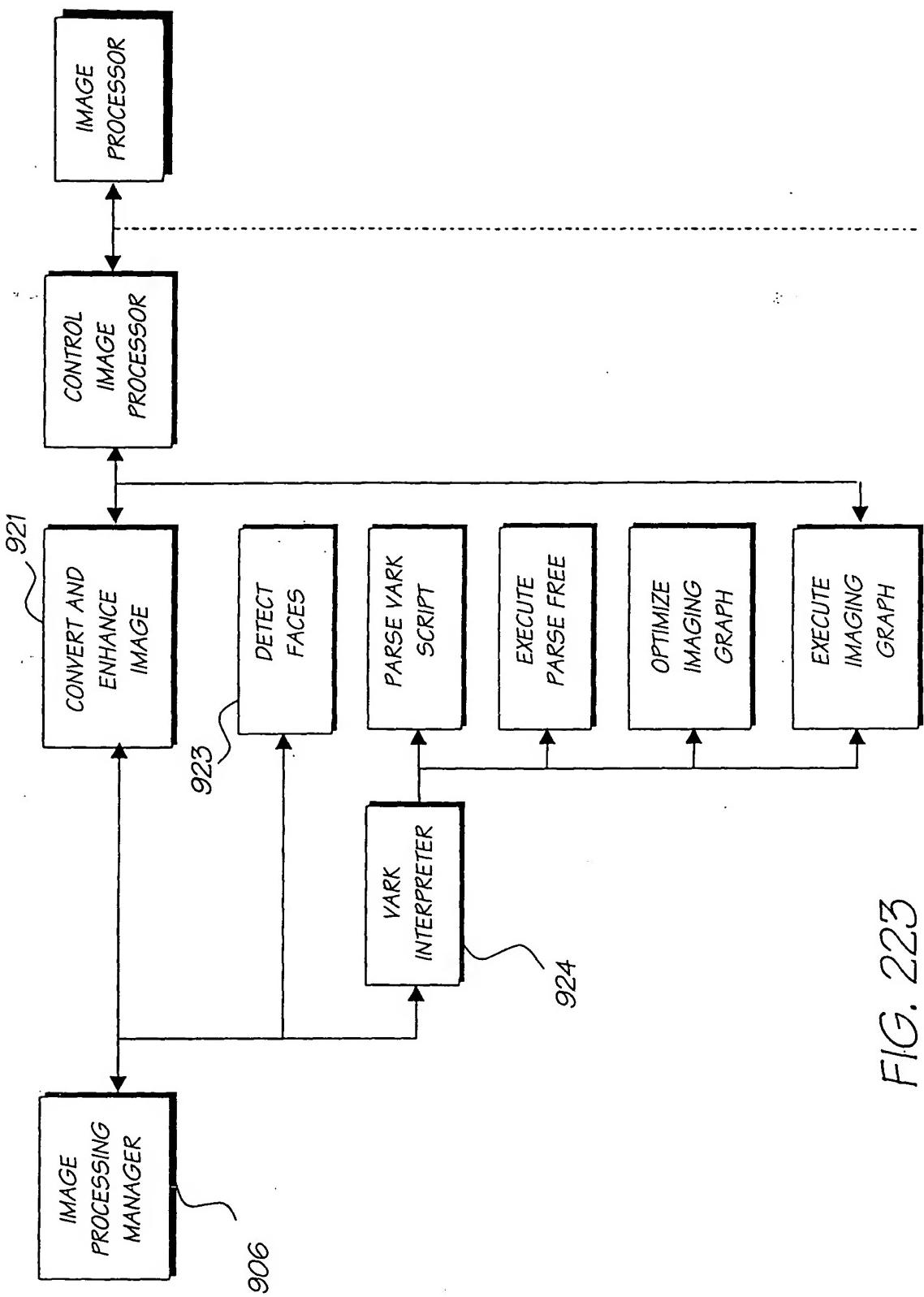


FIG. 223

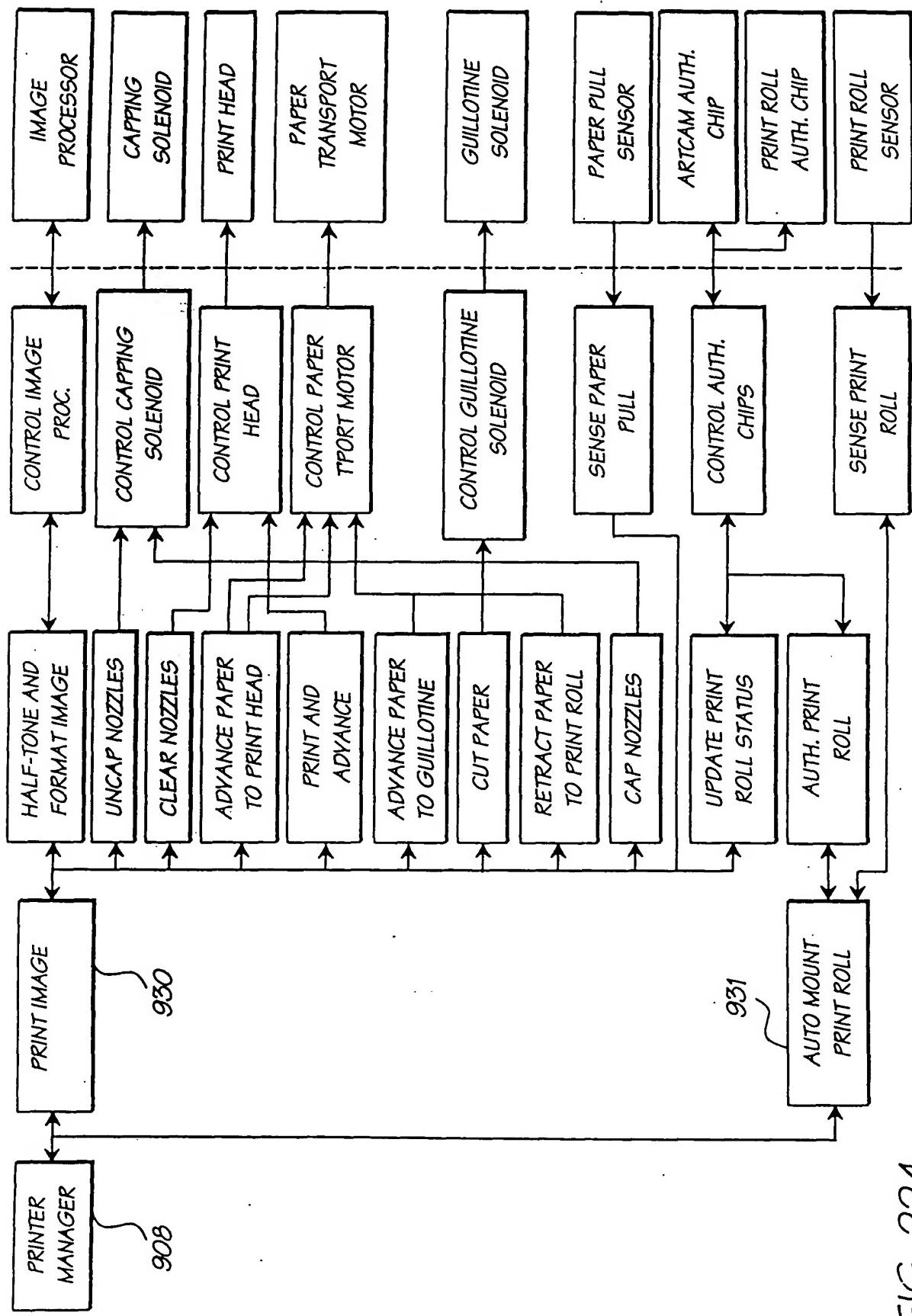


FIG. 224

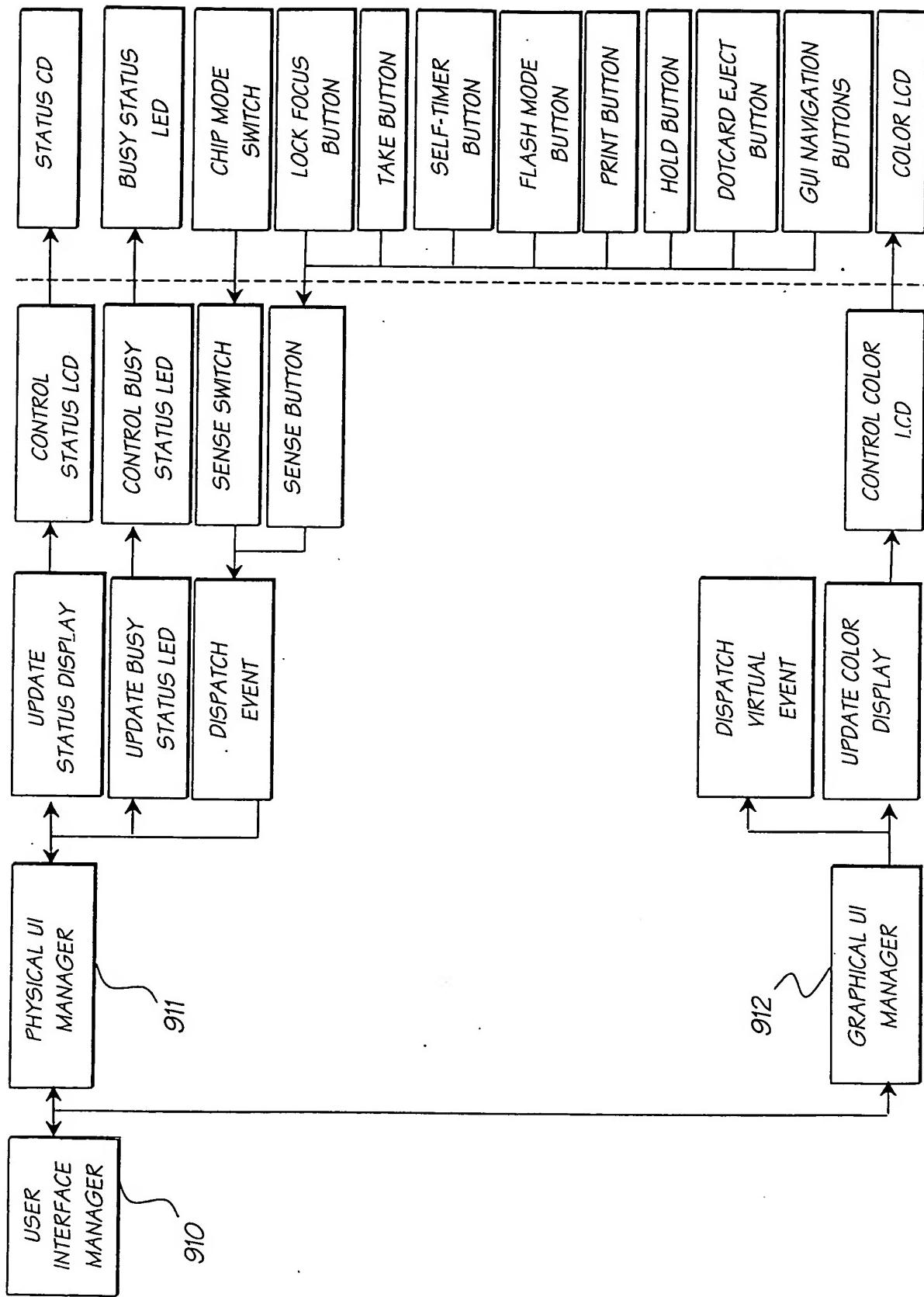


FIG. 225

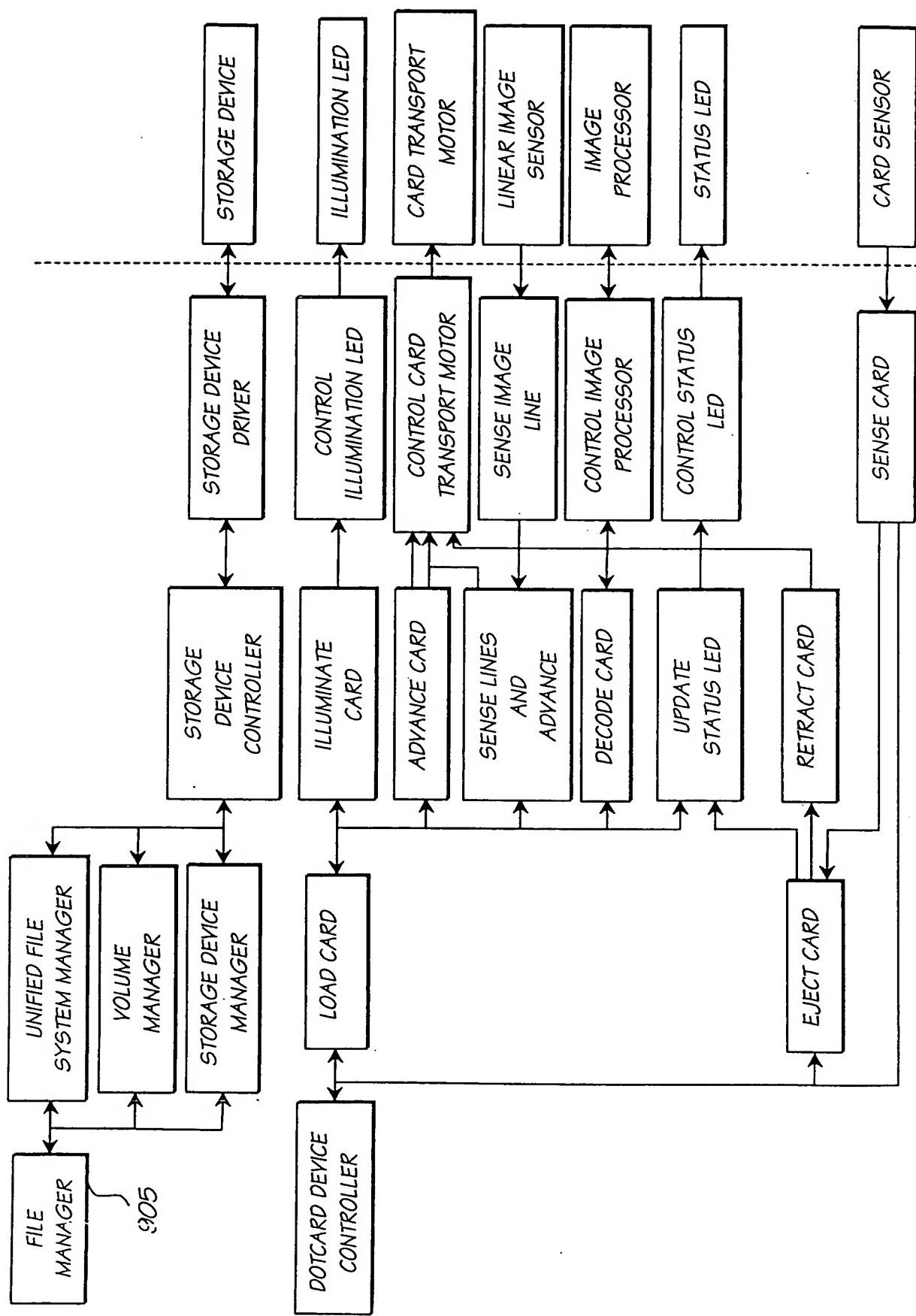


FIG. 226

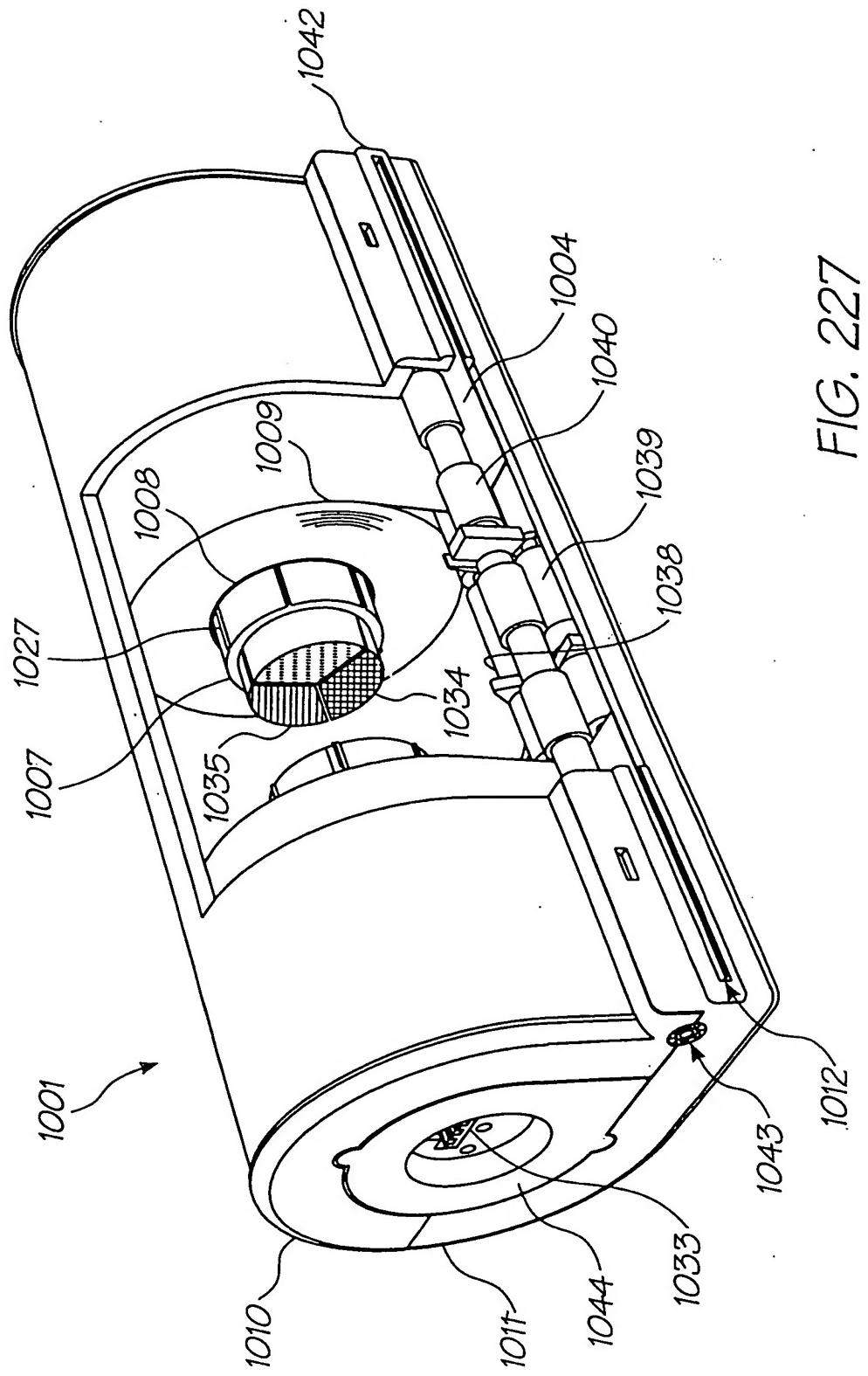


FIG. 227

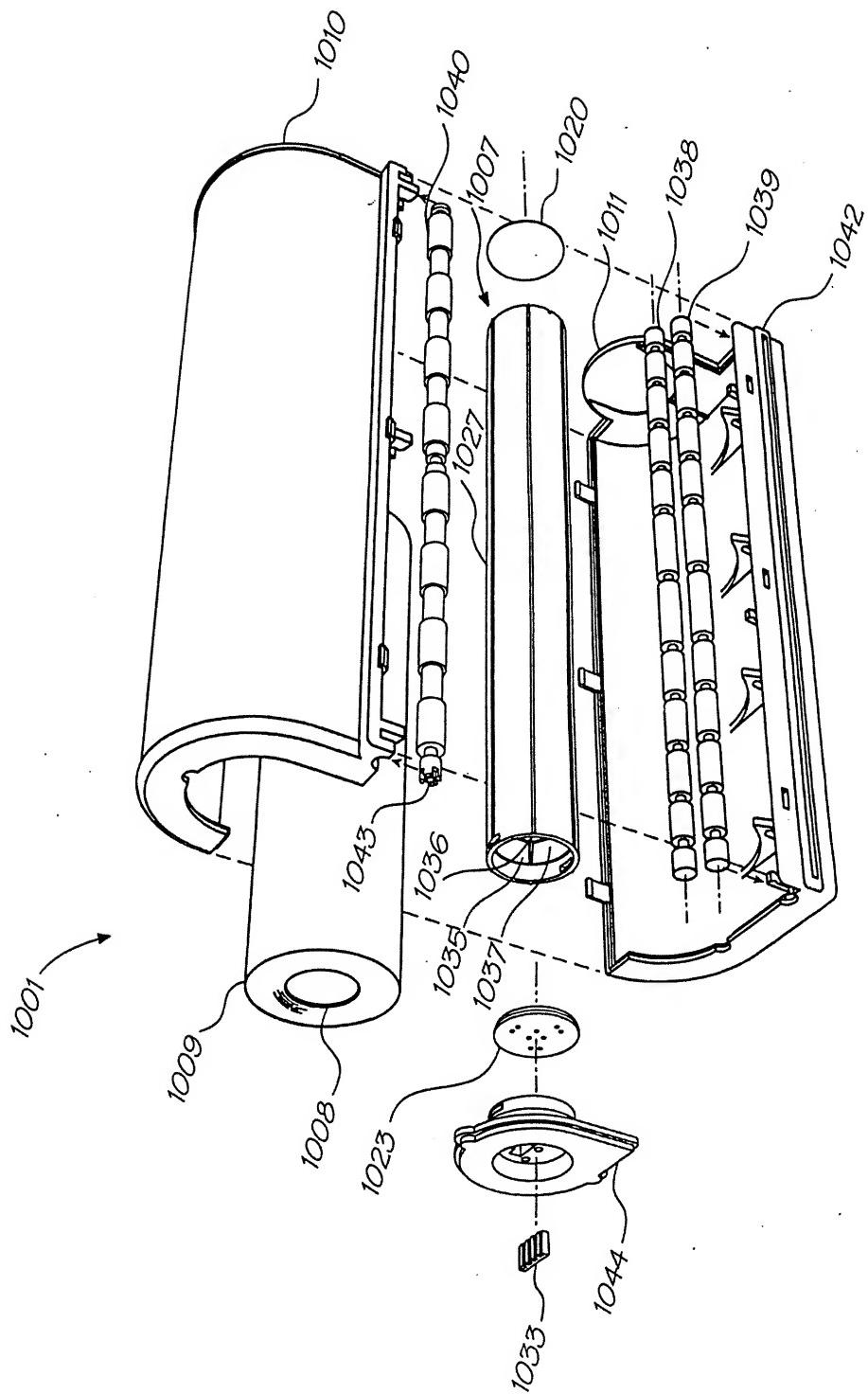


FIG. 228

FIG. 229

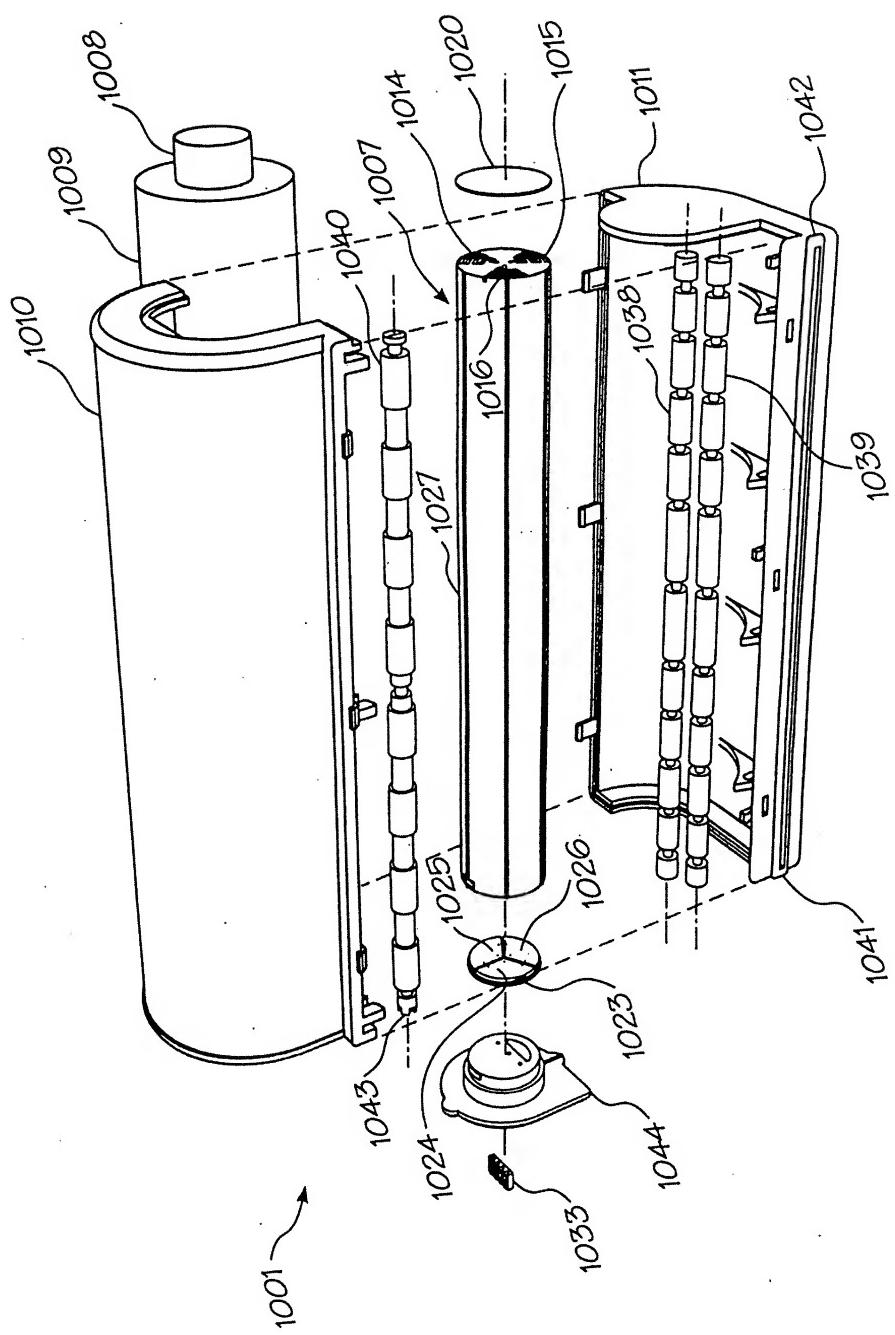
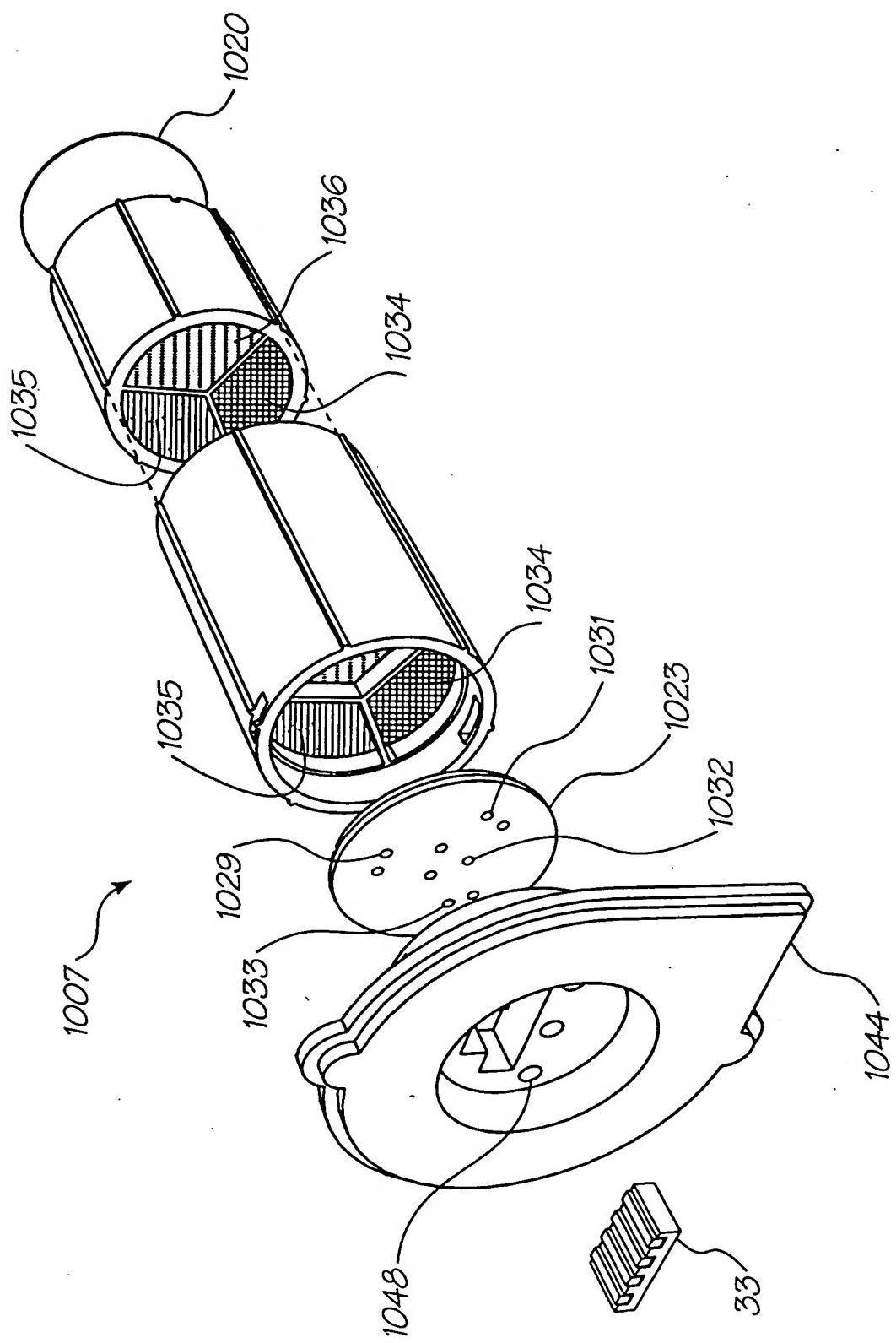


FIG. 230



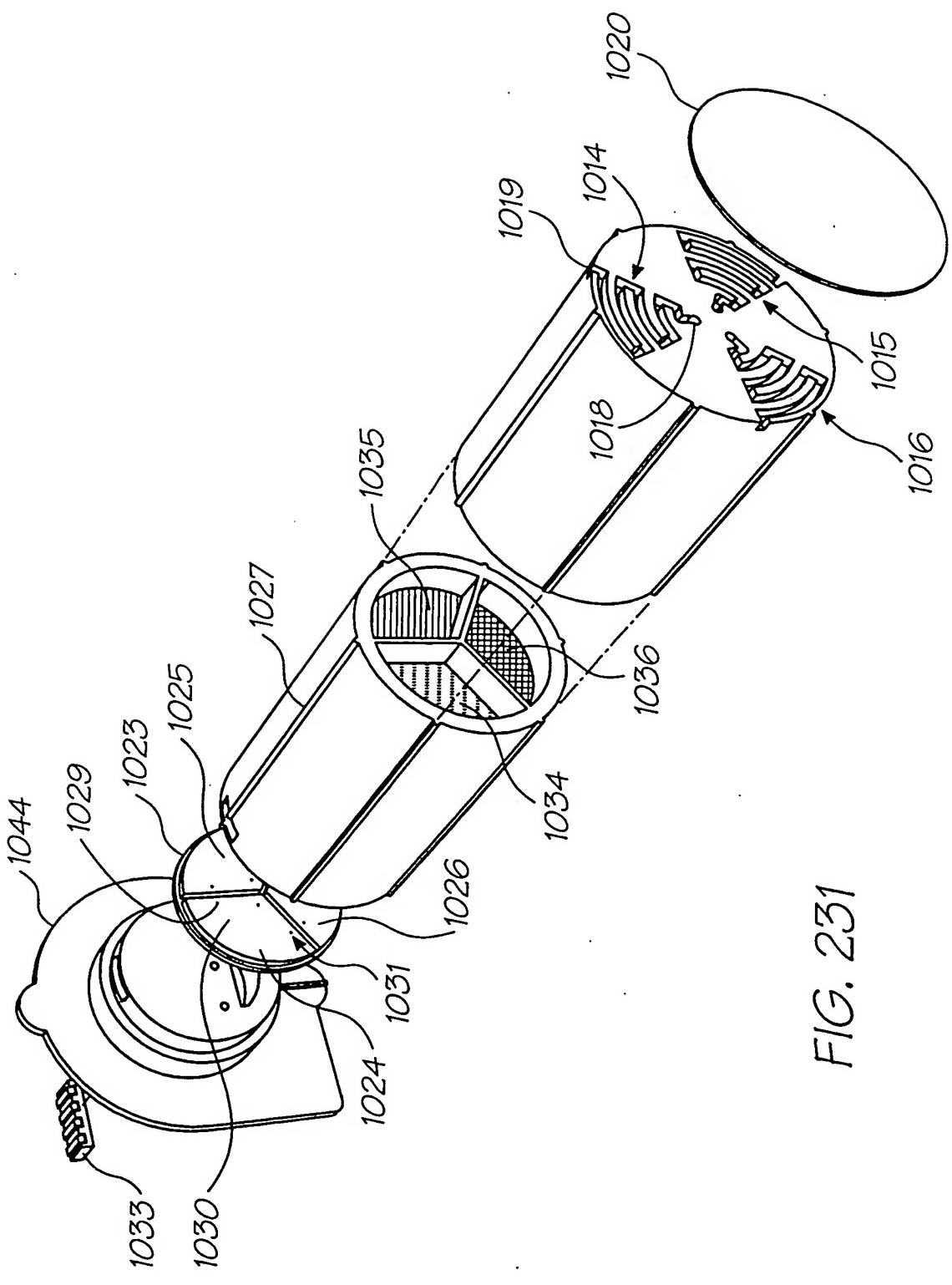


FIG. 231